

Please enter the following substitute drawings and consider the remarks herein.

IN THE DRAWINGS

Please replace the original drawings as filed with the substitute drawings submitted herein.

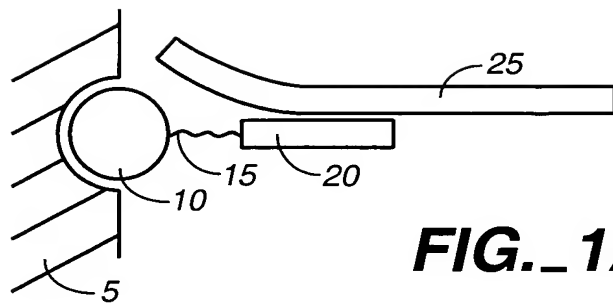


FIG. 1A

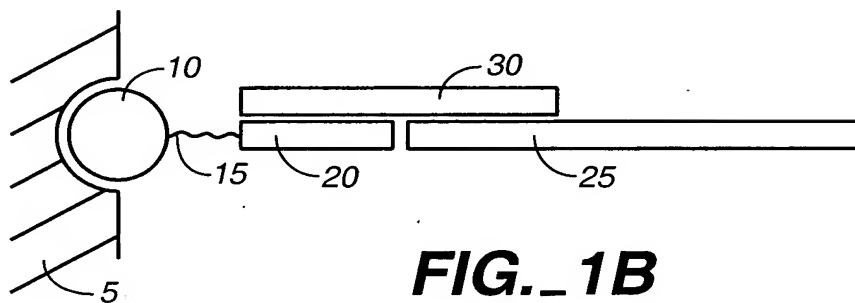


FIG. 1B

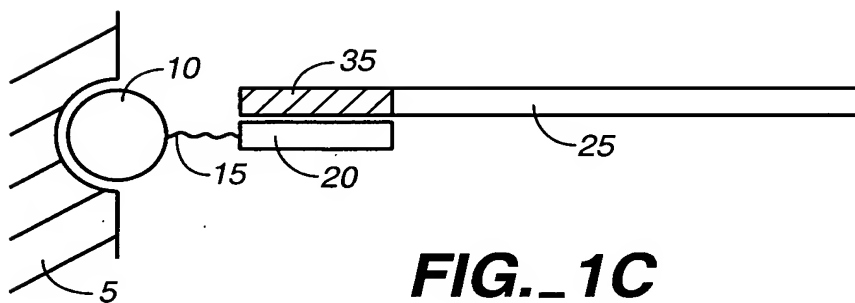
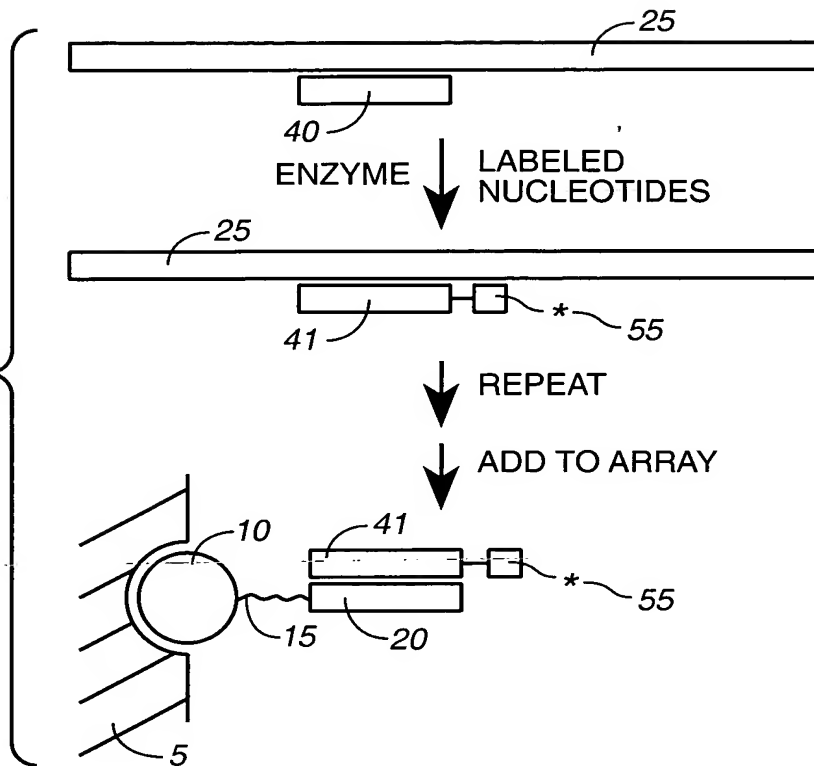
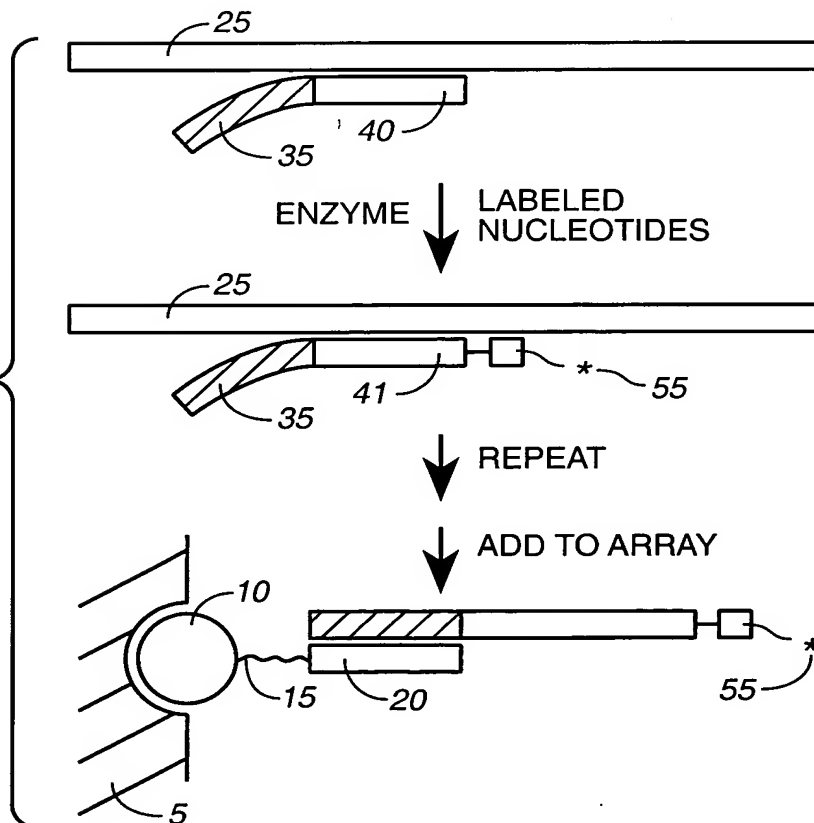
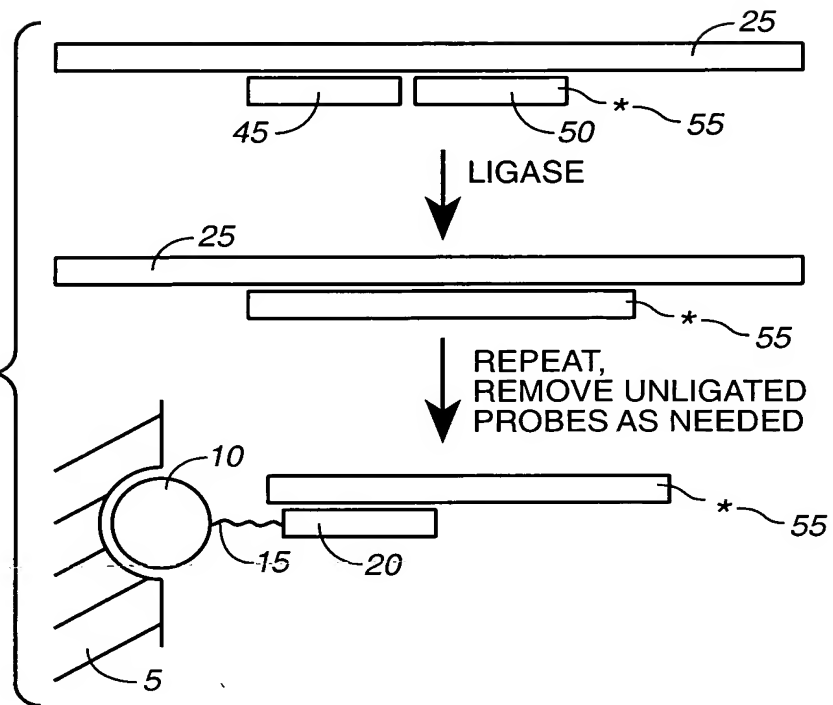
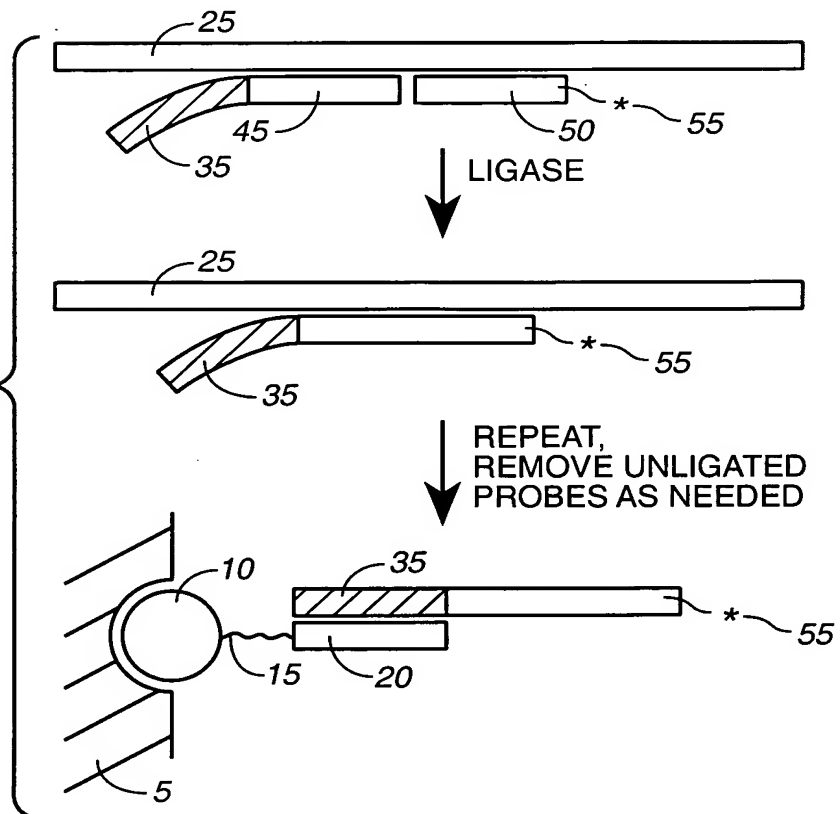
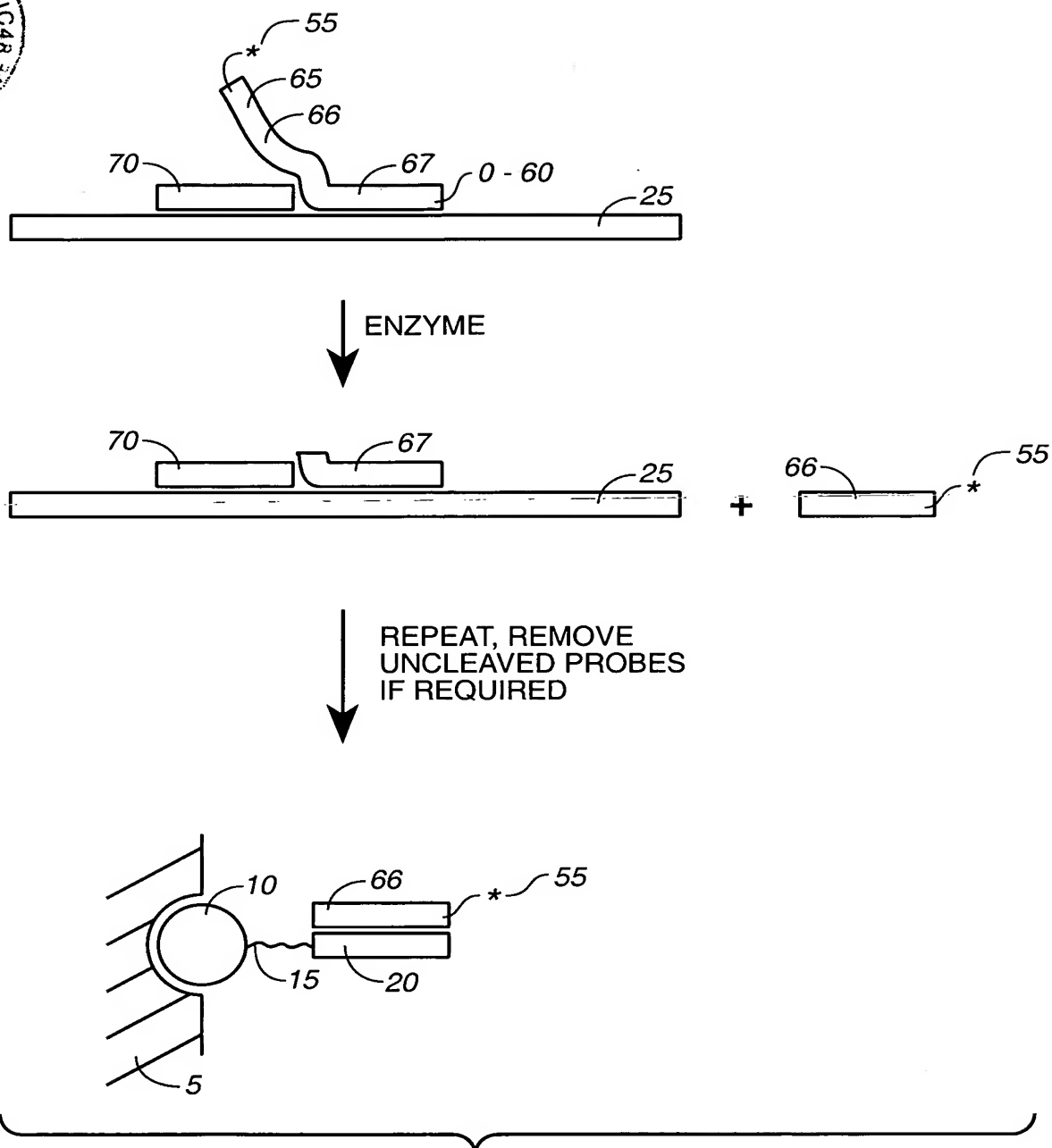


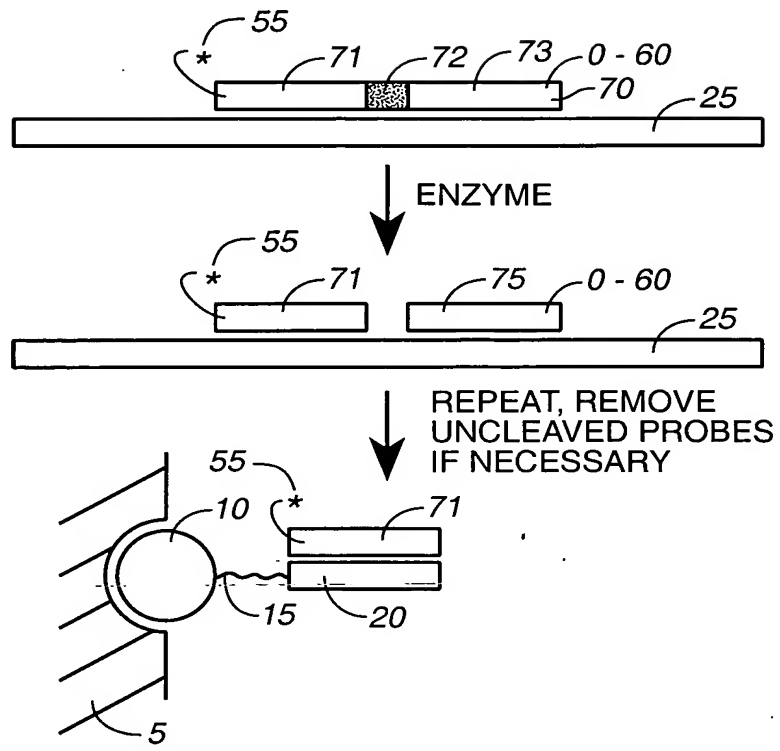
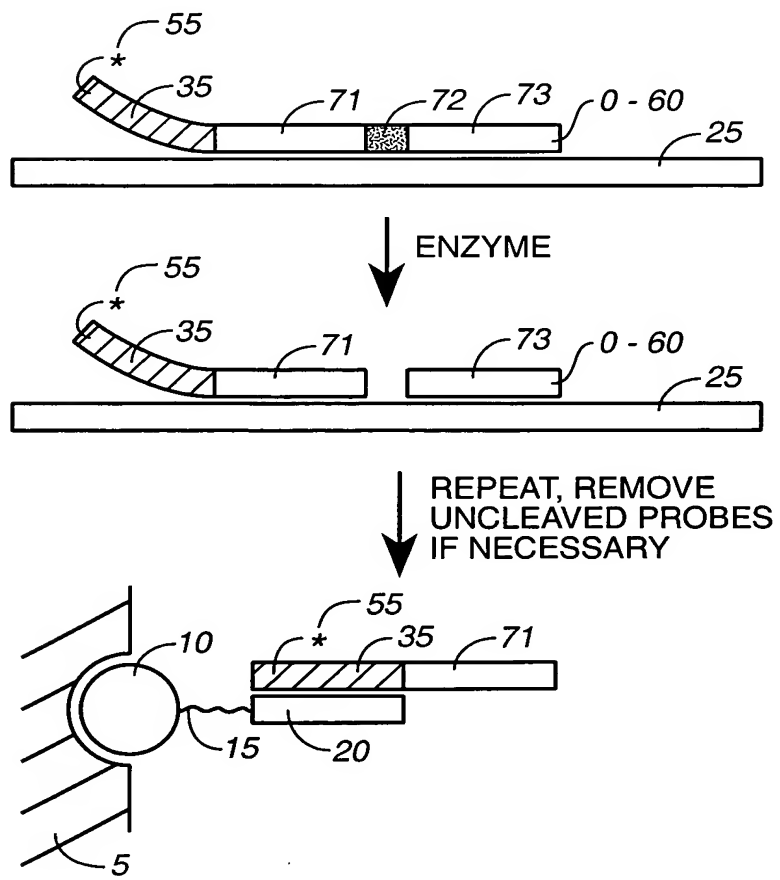
FIG. 1C

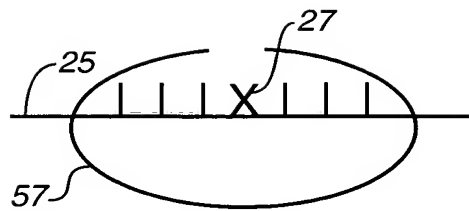
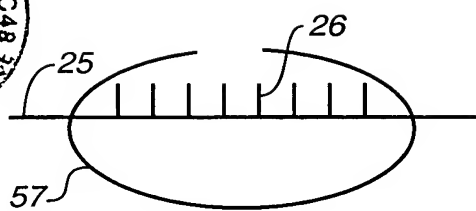
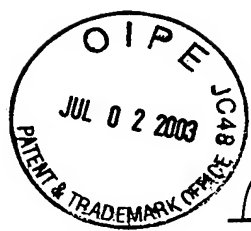
**FIG._2A****FIG._2B**

**FIG._3A****FIG._3B**

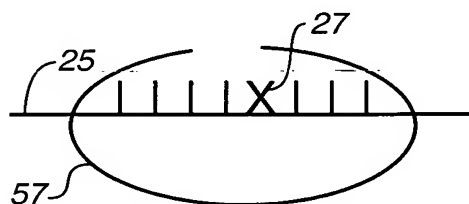
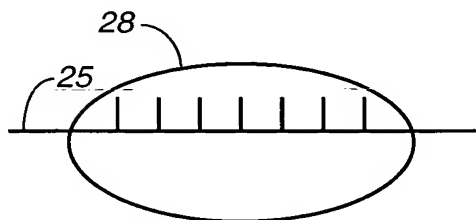
**FIG. 4**

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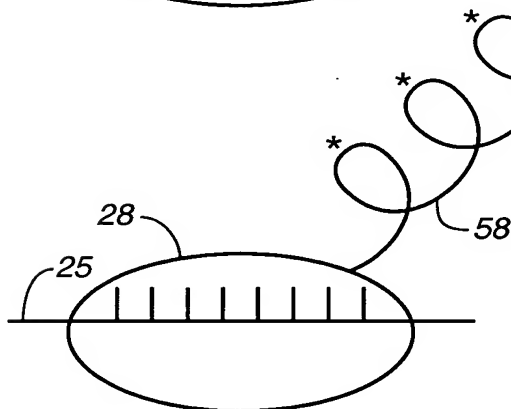
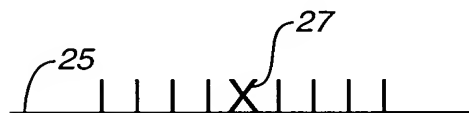
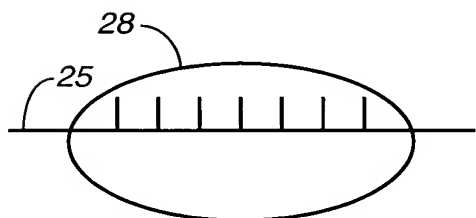
**FIG._5A****FIG._5B**



LIGASE



WASH



POLYMERASE
NTPS*

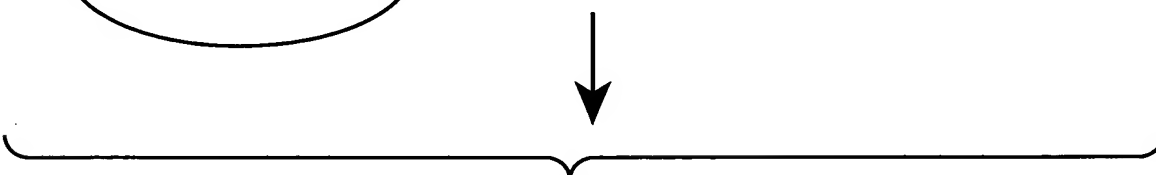
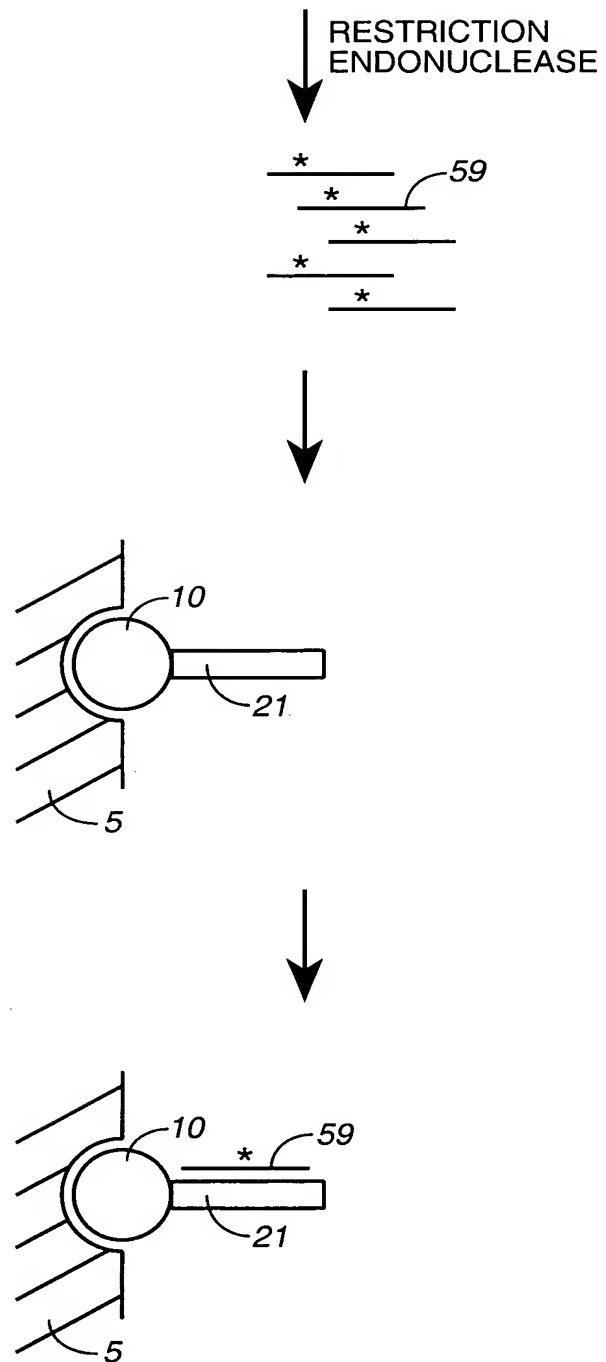
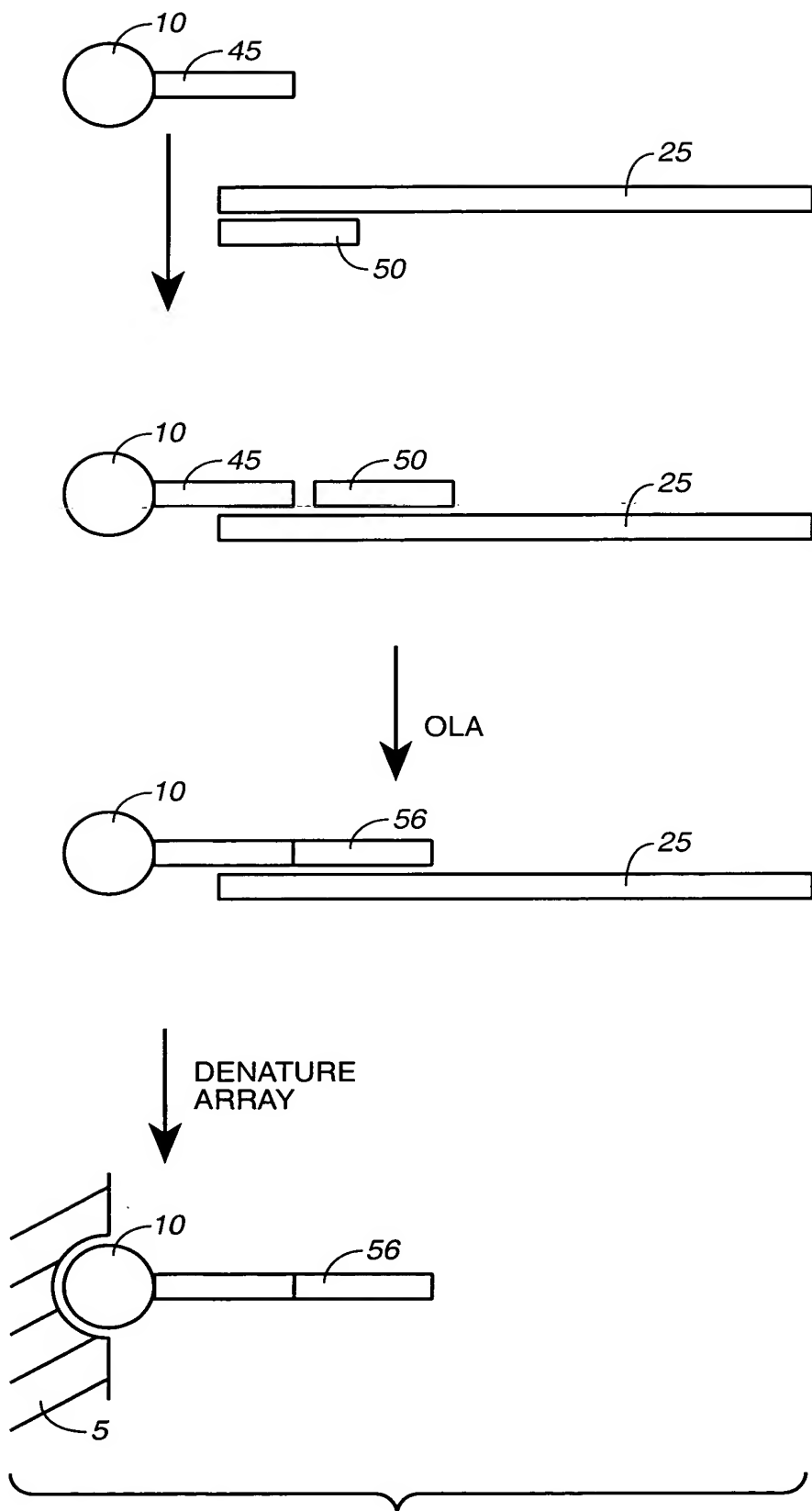
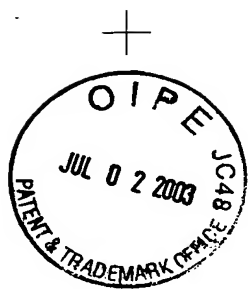
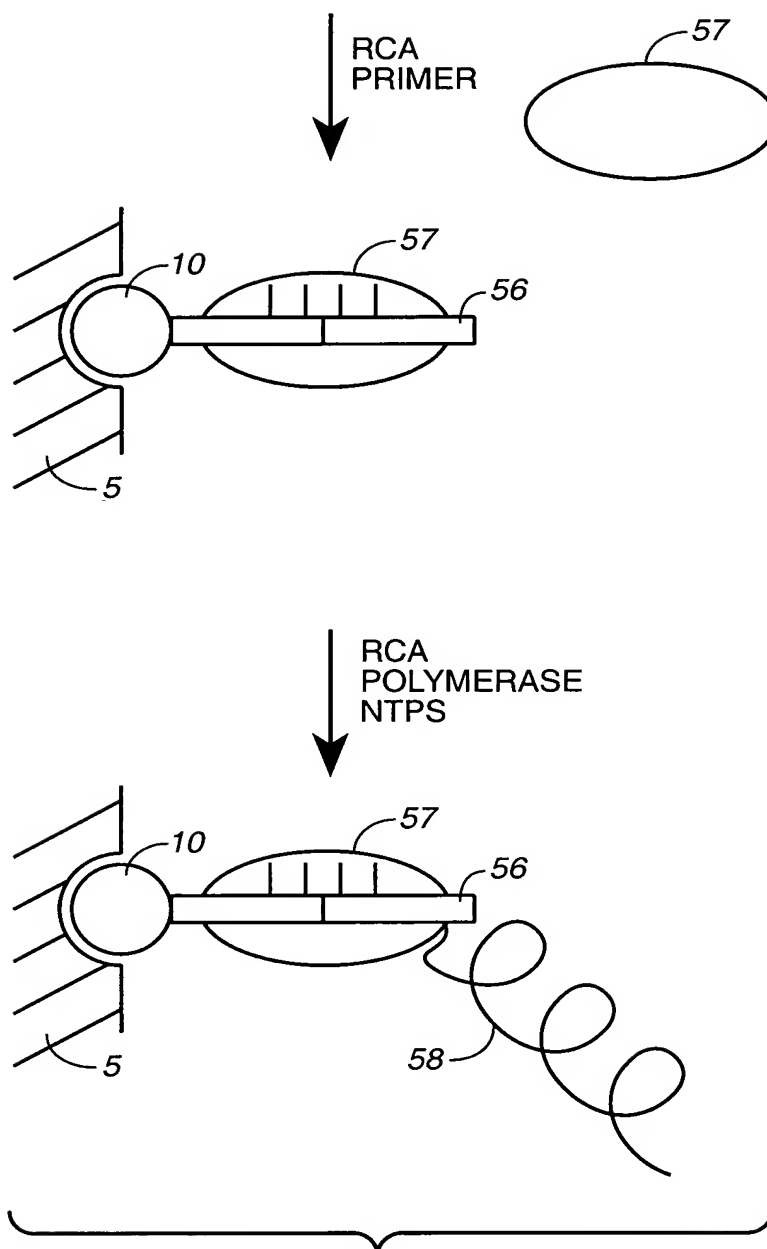
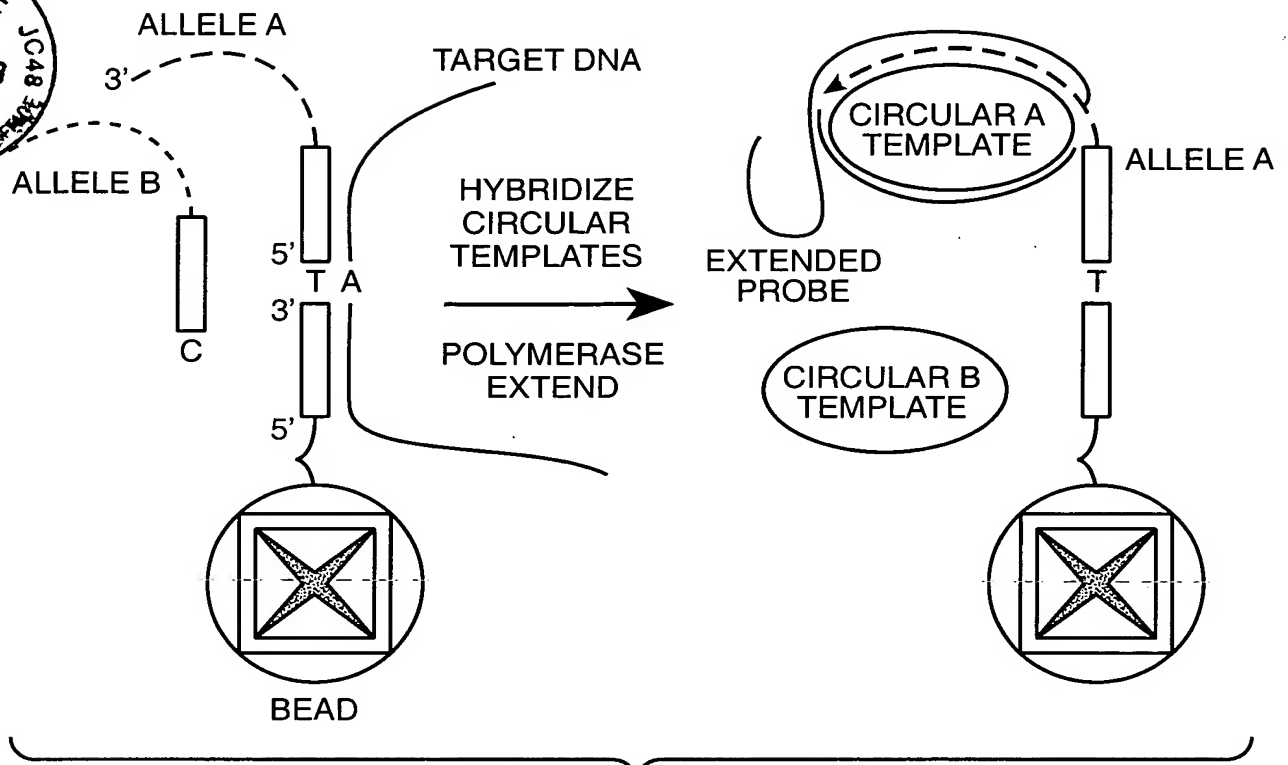
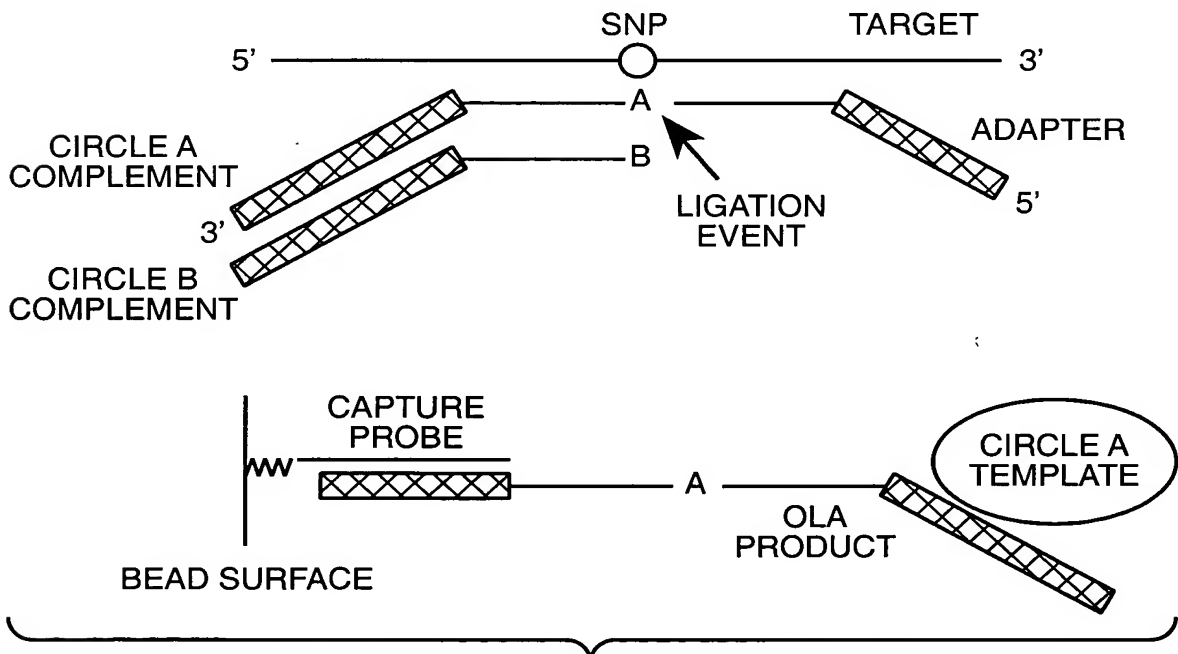


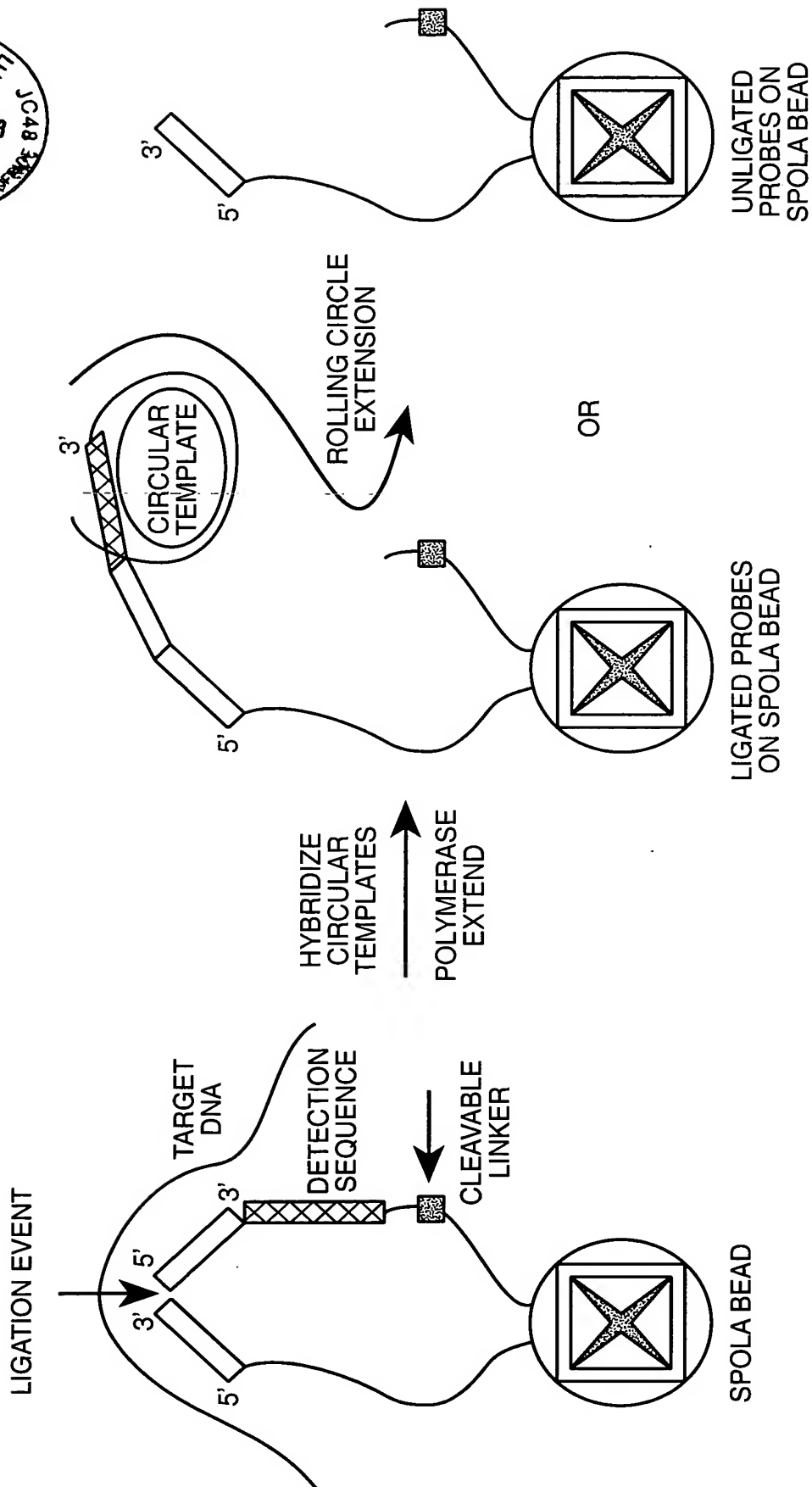
FIG. 6A

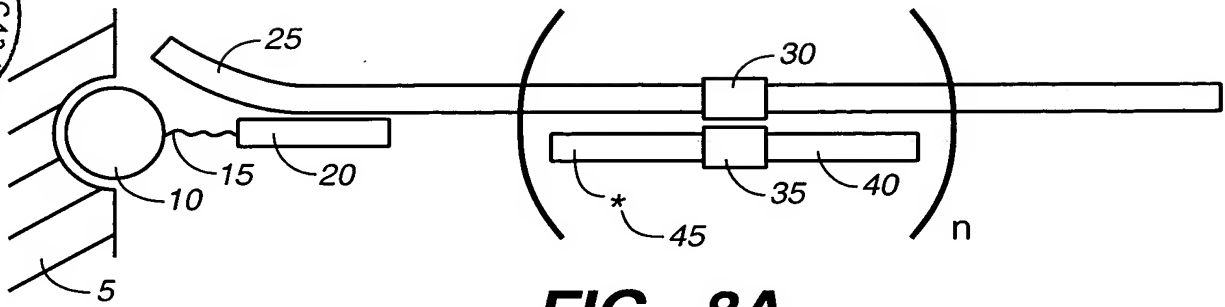
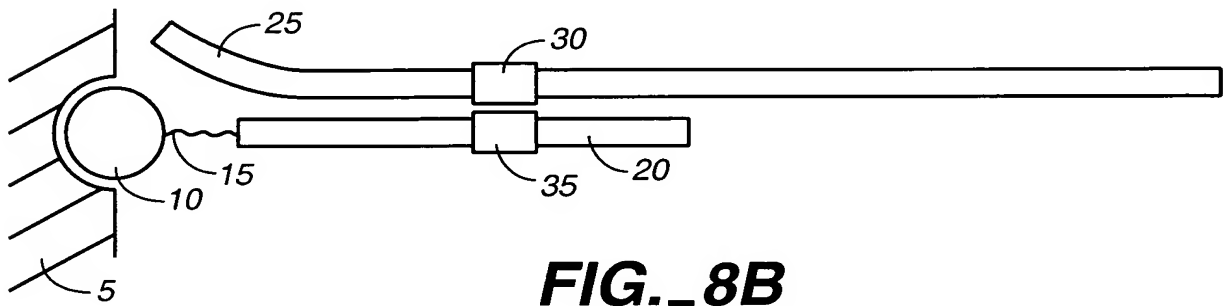
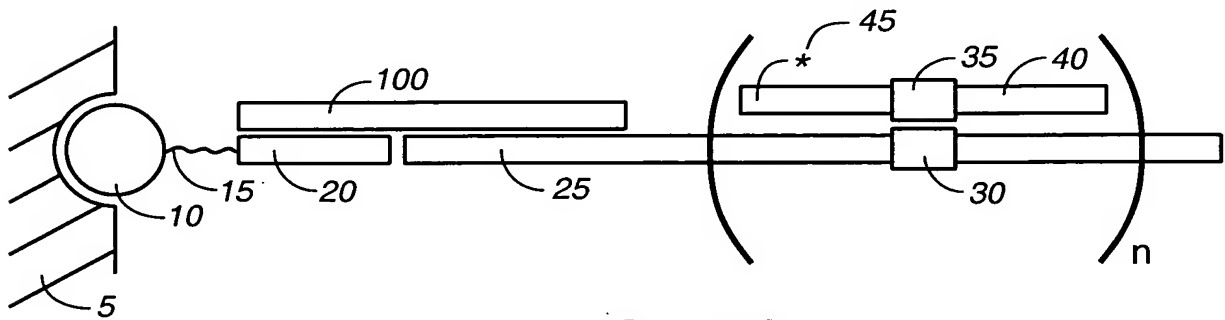
**FIG._6B**

**FIG. 7A-1**



**FIG. 7B****FIG. 7D**

**FIG. 7C**

**FIG._8A****FIG._8B****FIG._8C**

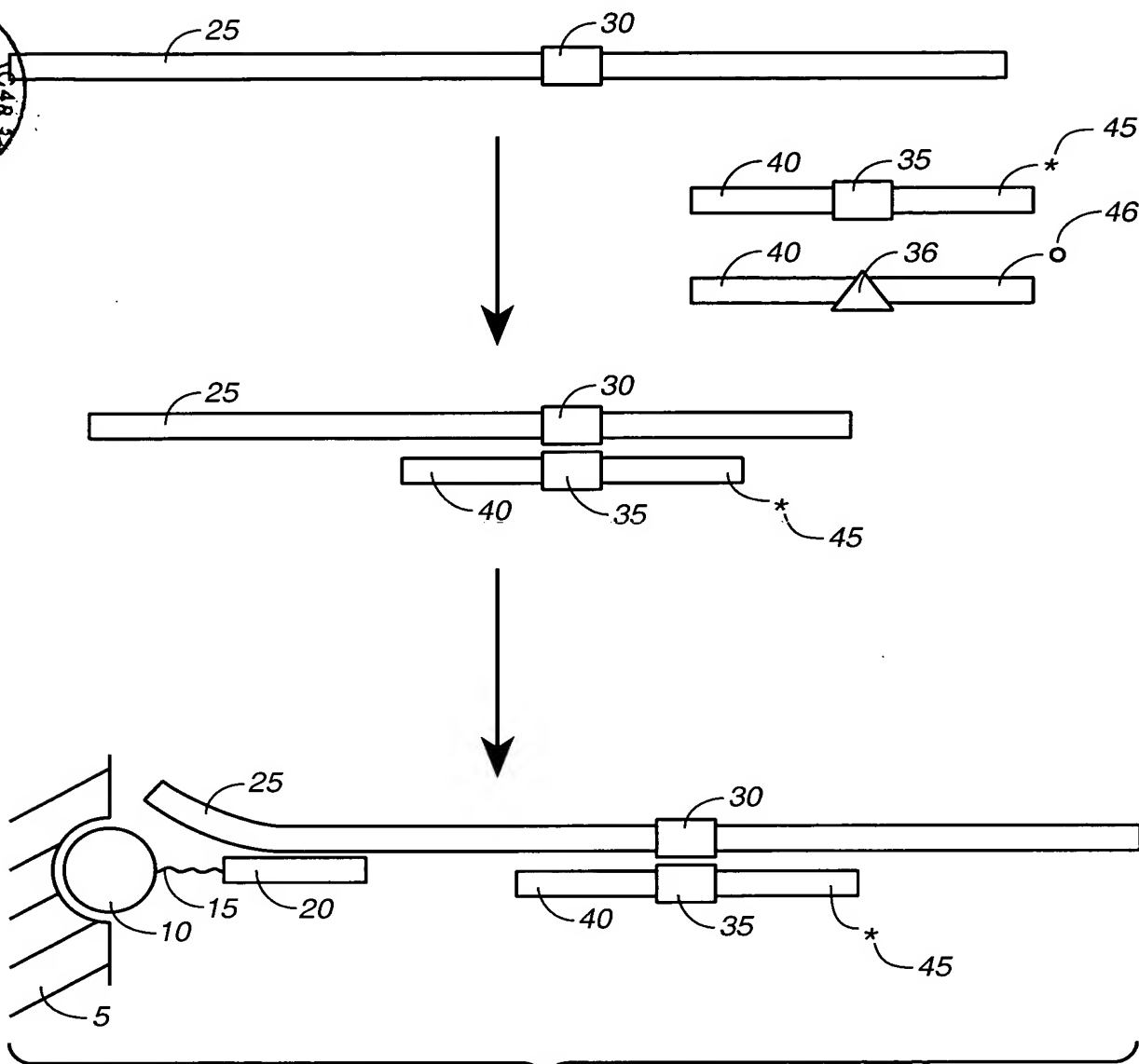


FIG. 8D

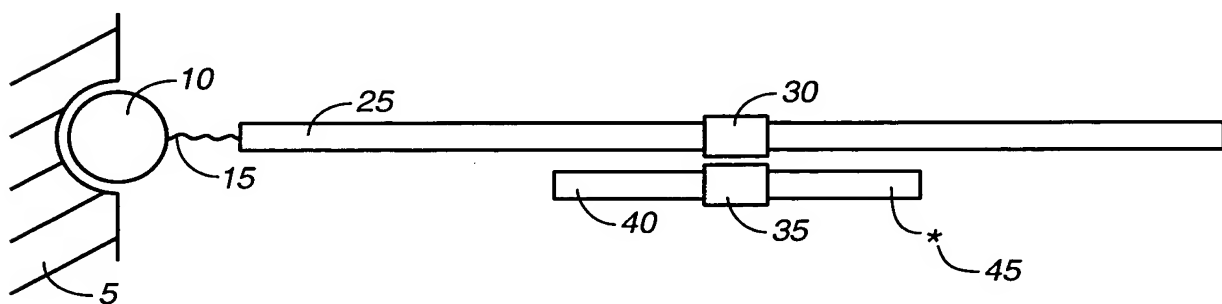
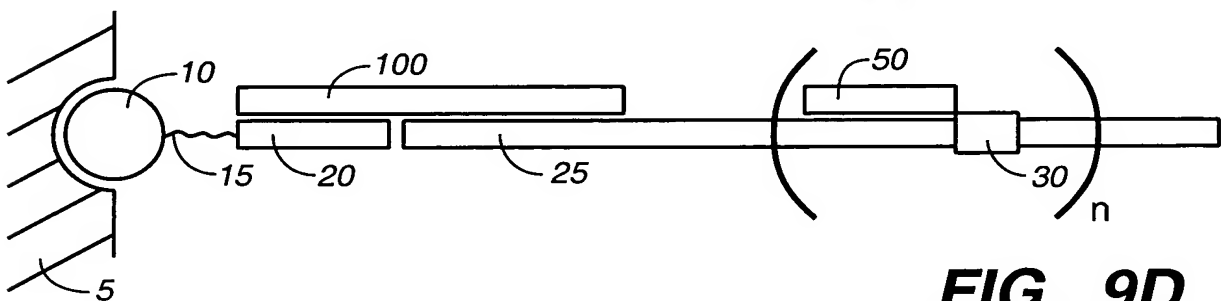
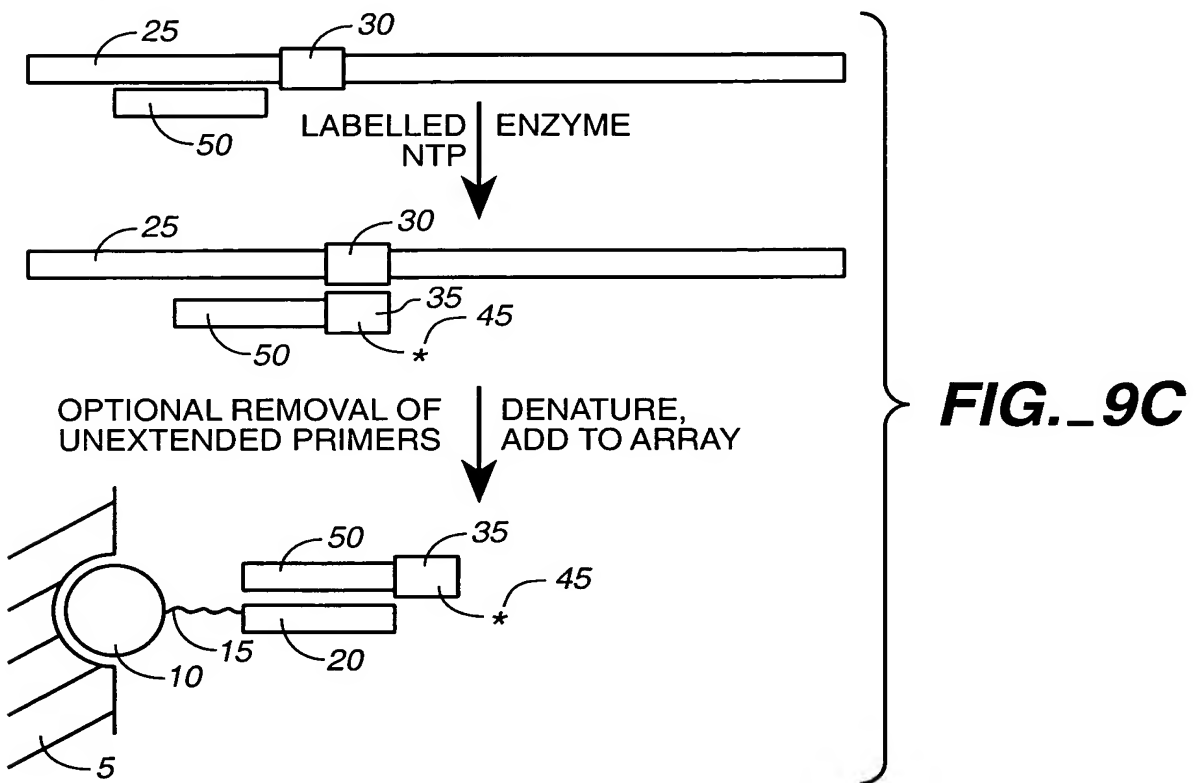
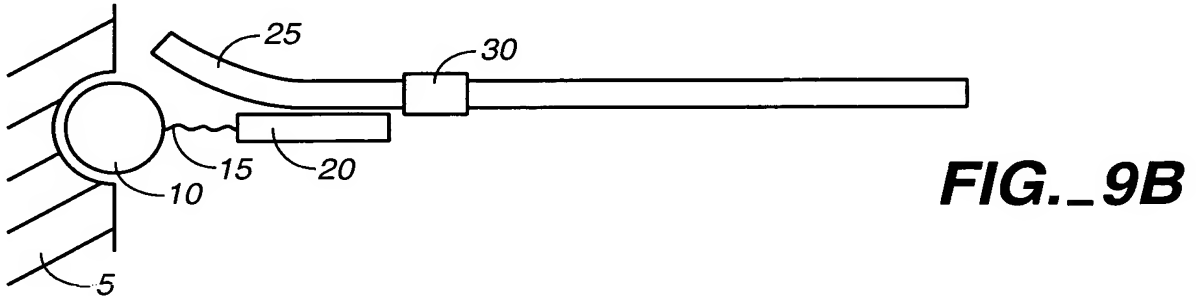
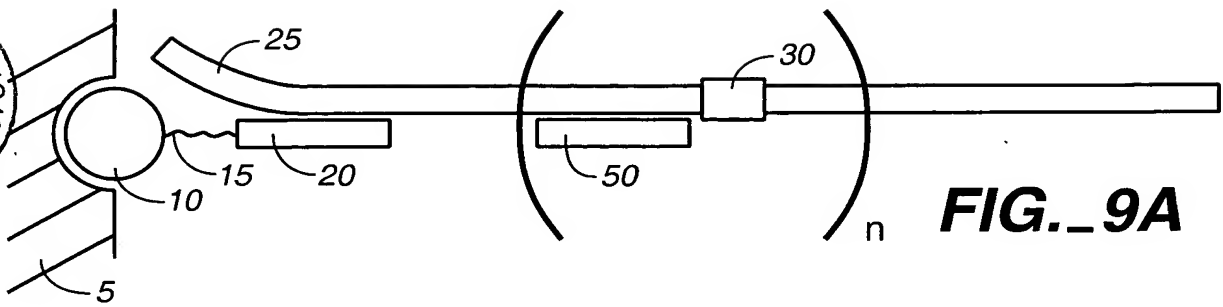


FIG. 8E

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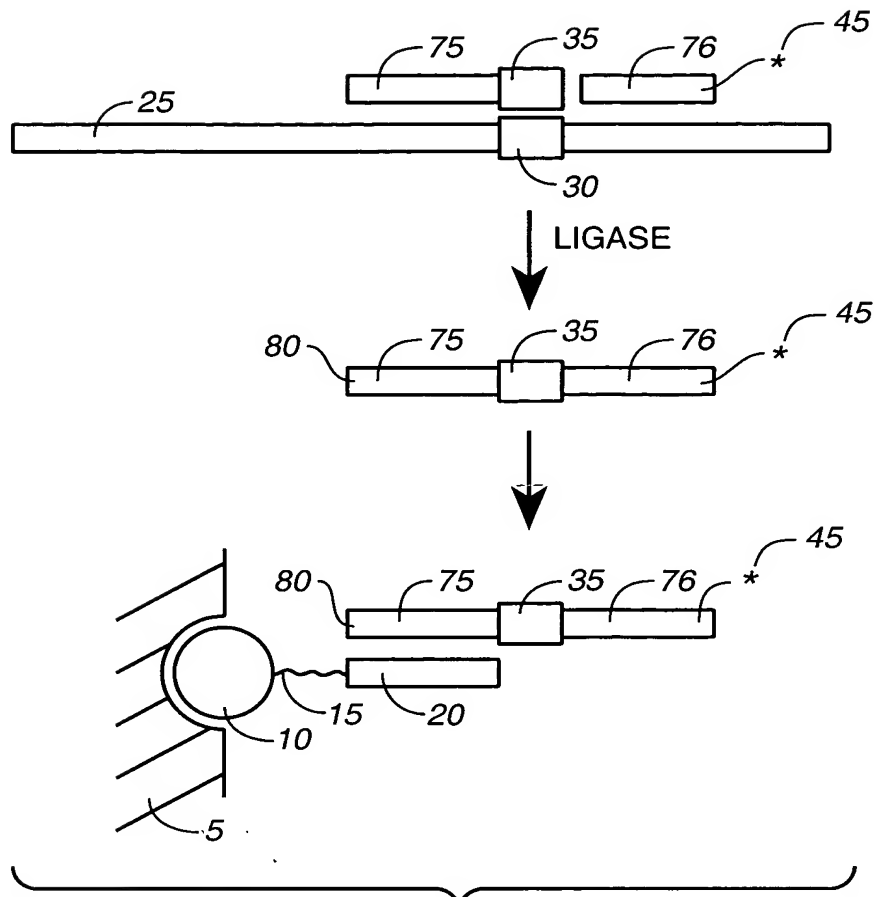


FIG. 10A

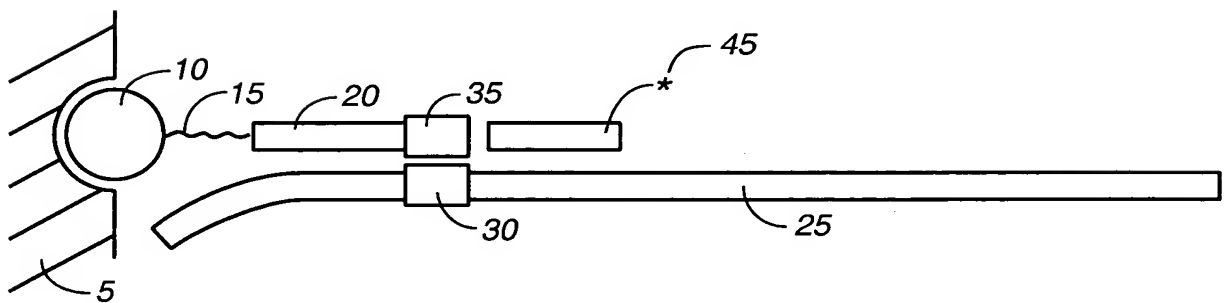
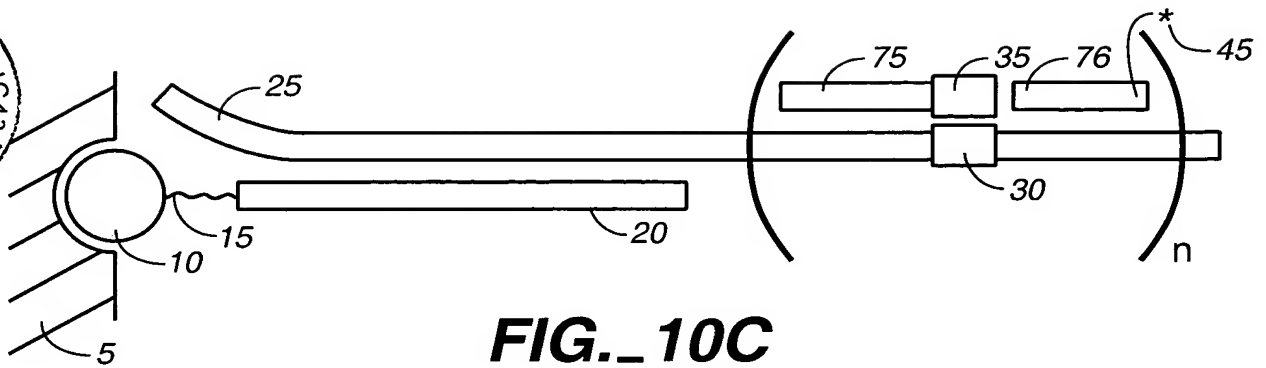
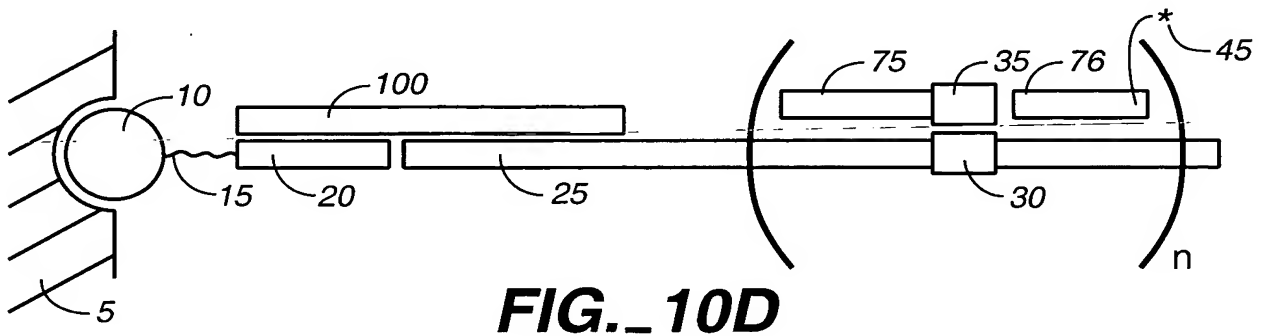
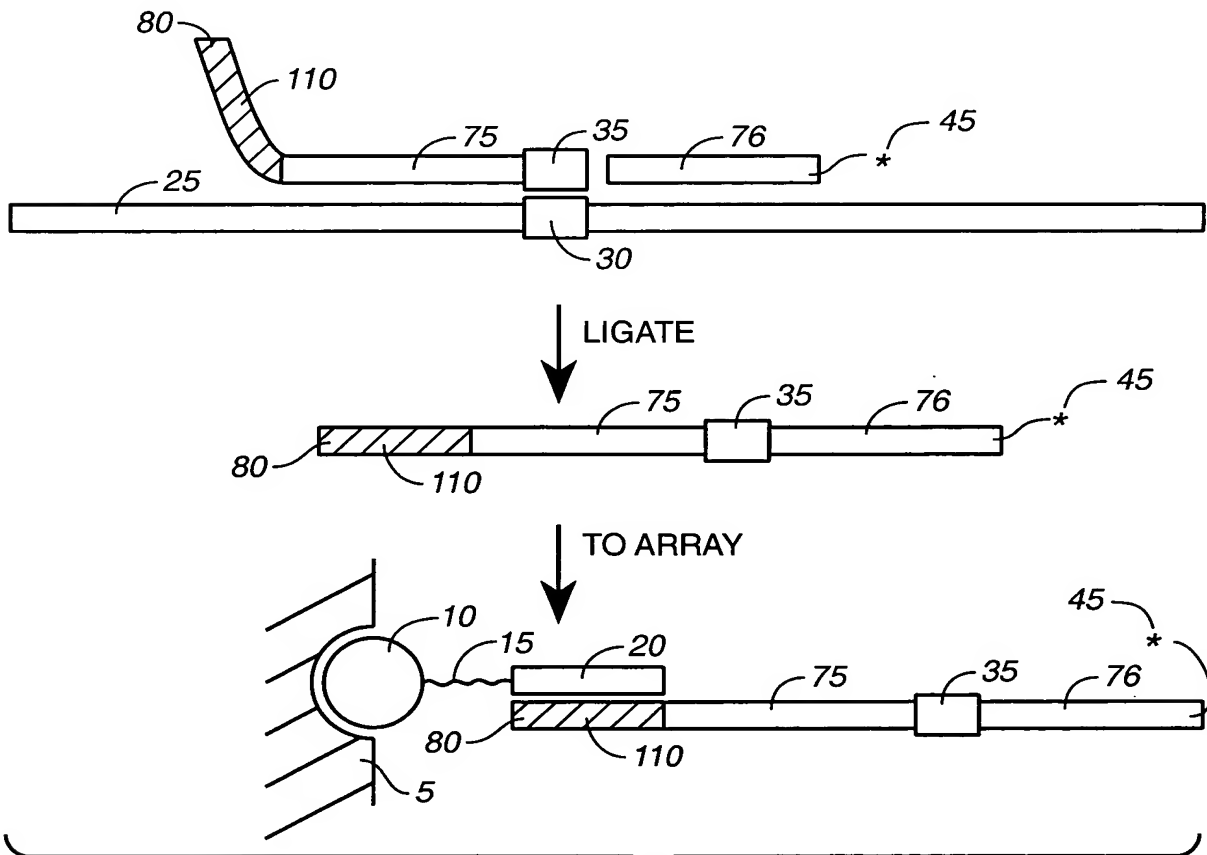


FIG. 10B

**FIG. 10C****FIG. 10D****FIG. 10E**

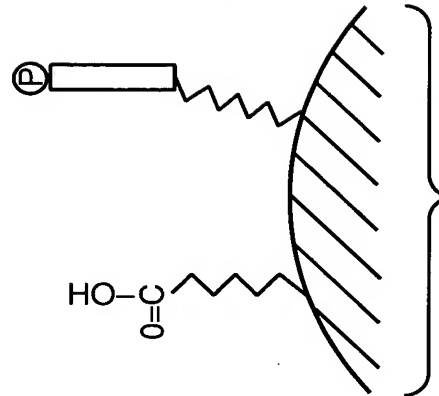
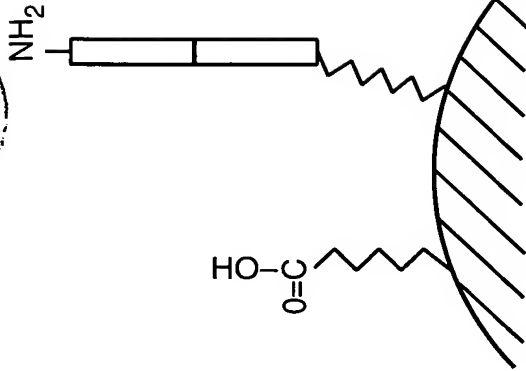
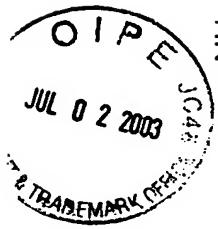


FIG._11C

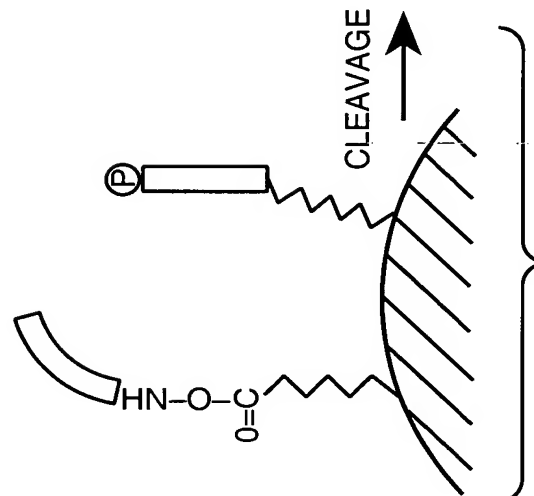
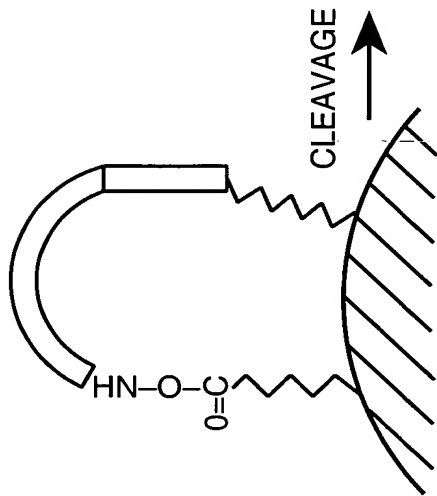


FIG._11B

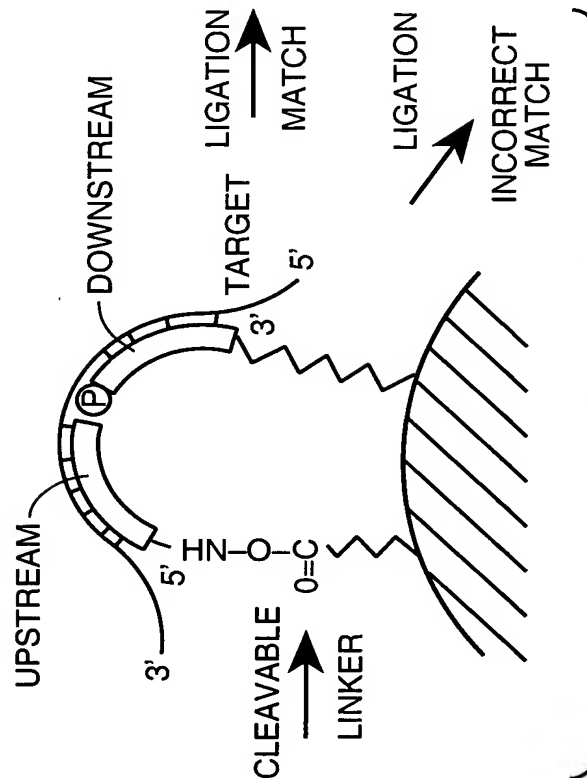
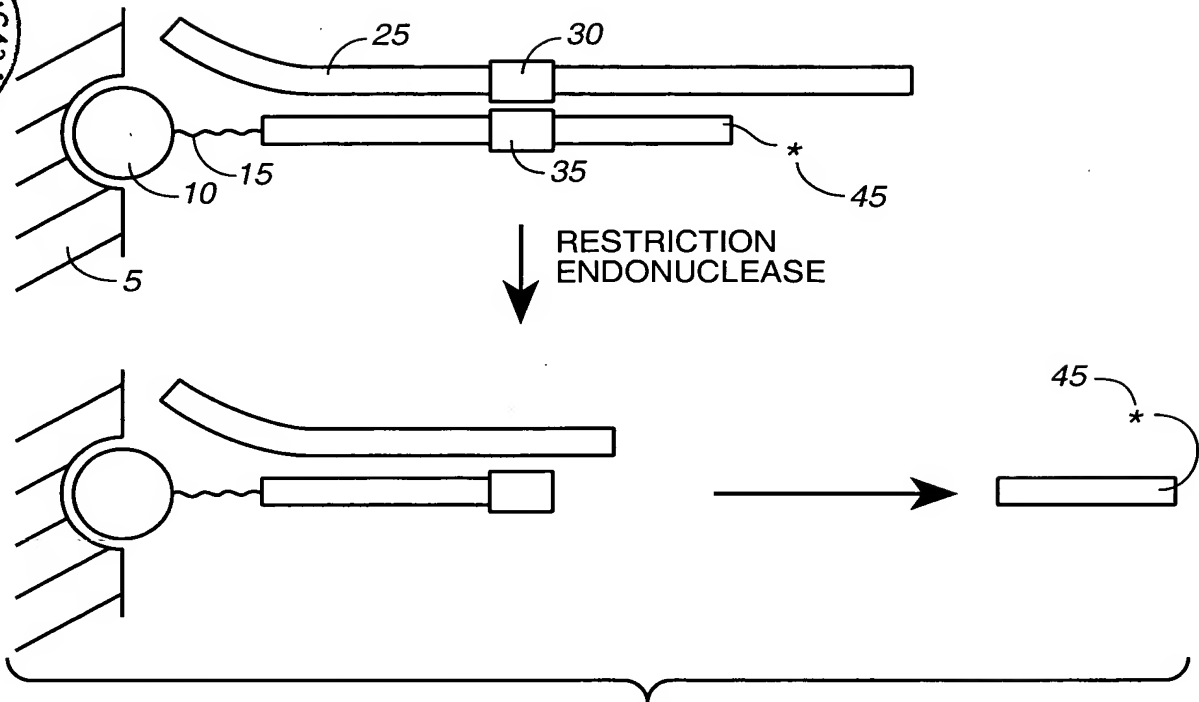
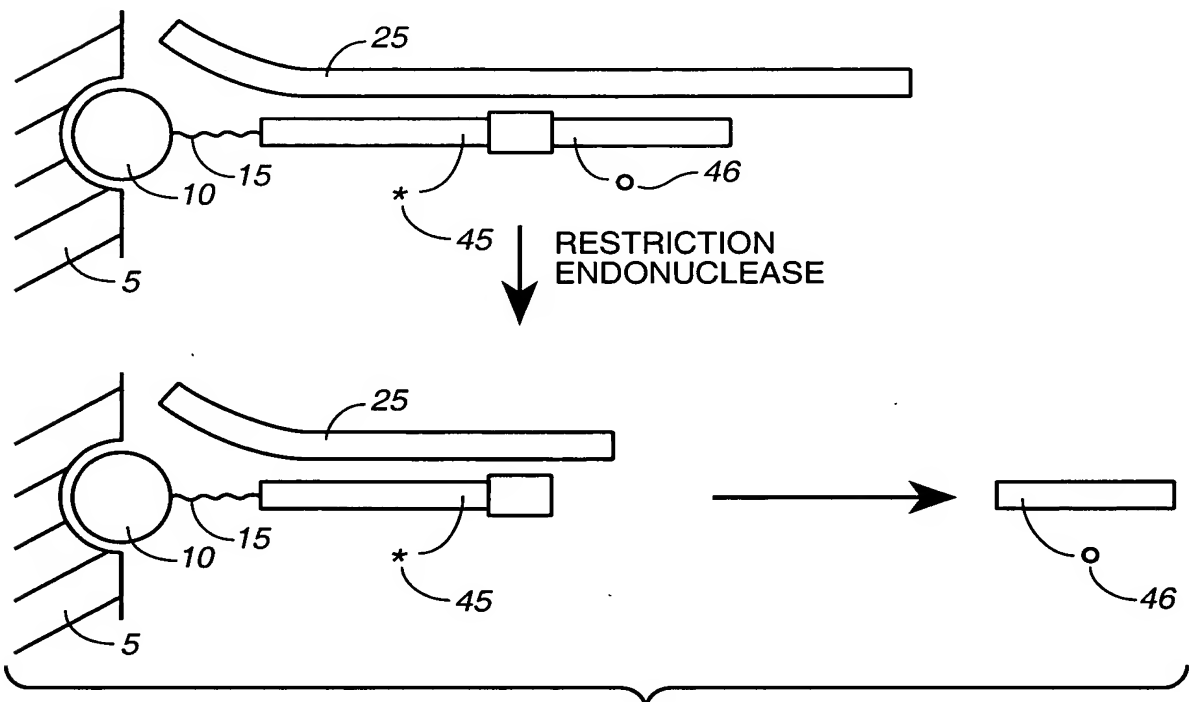
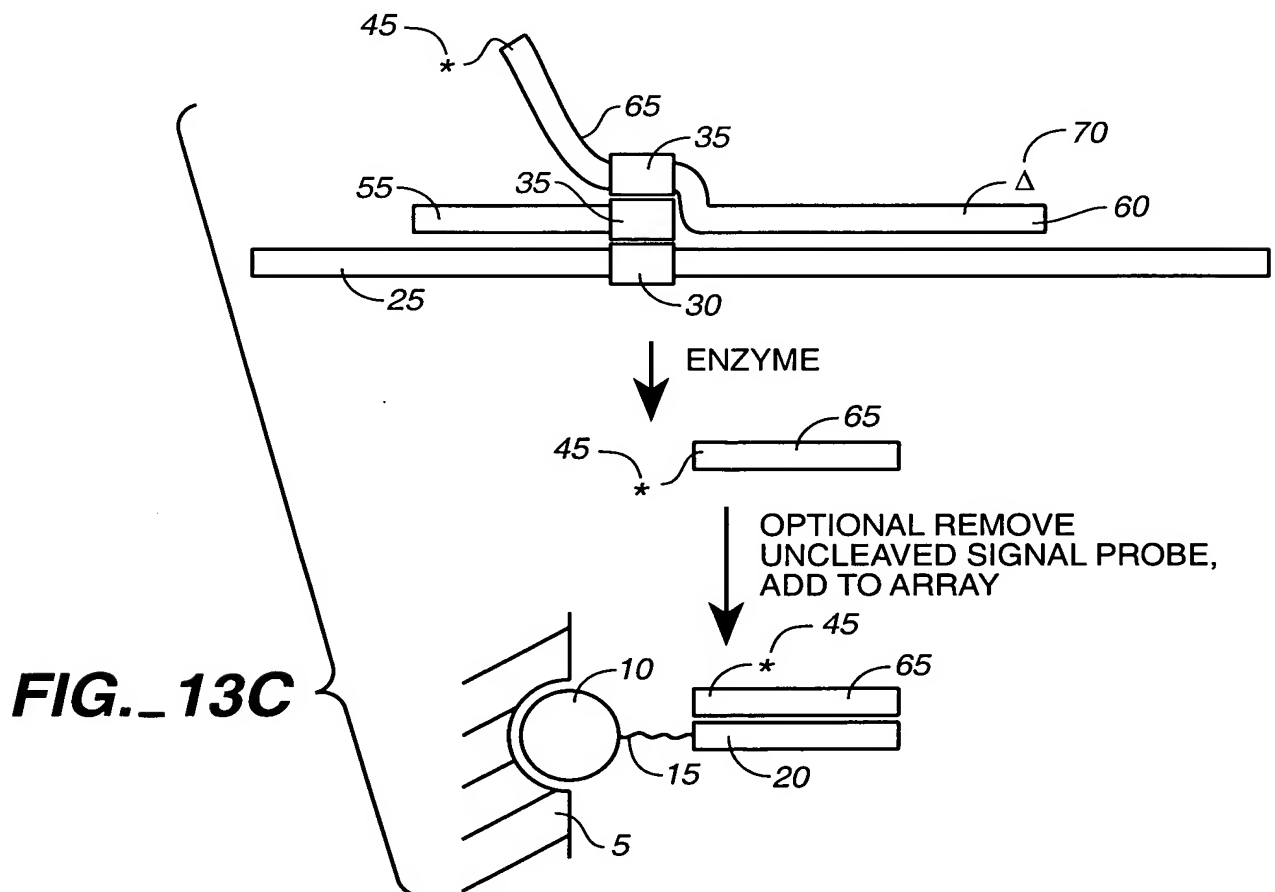
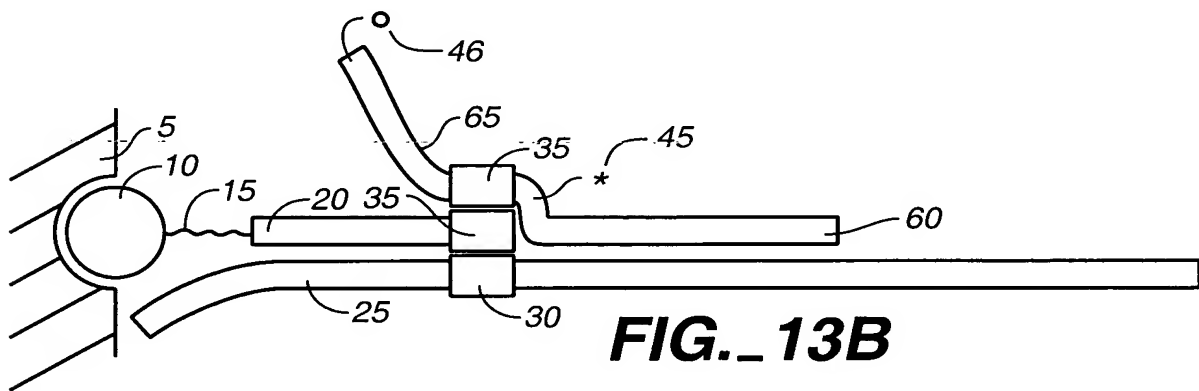
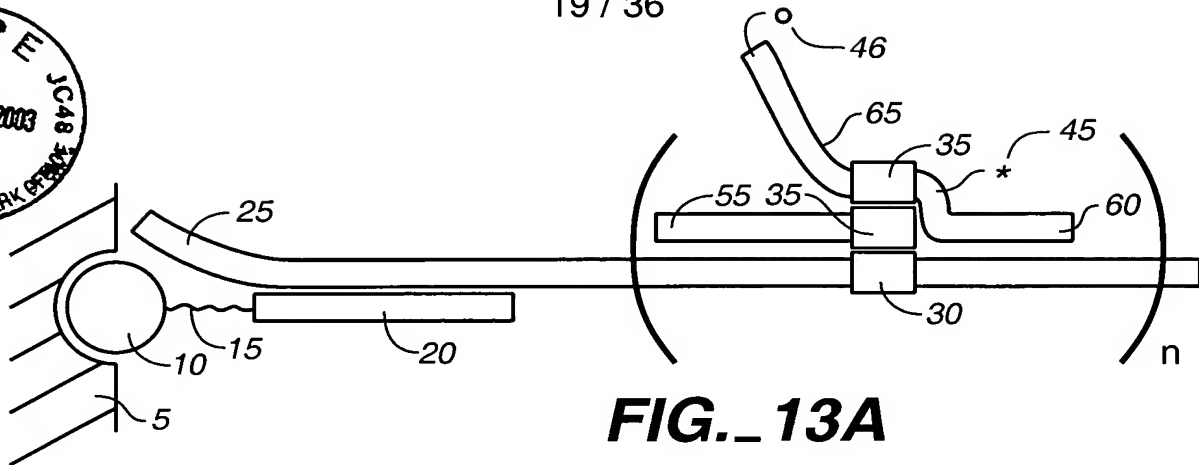
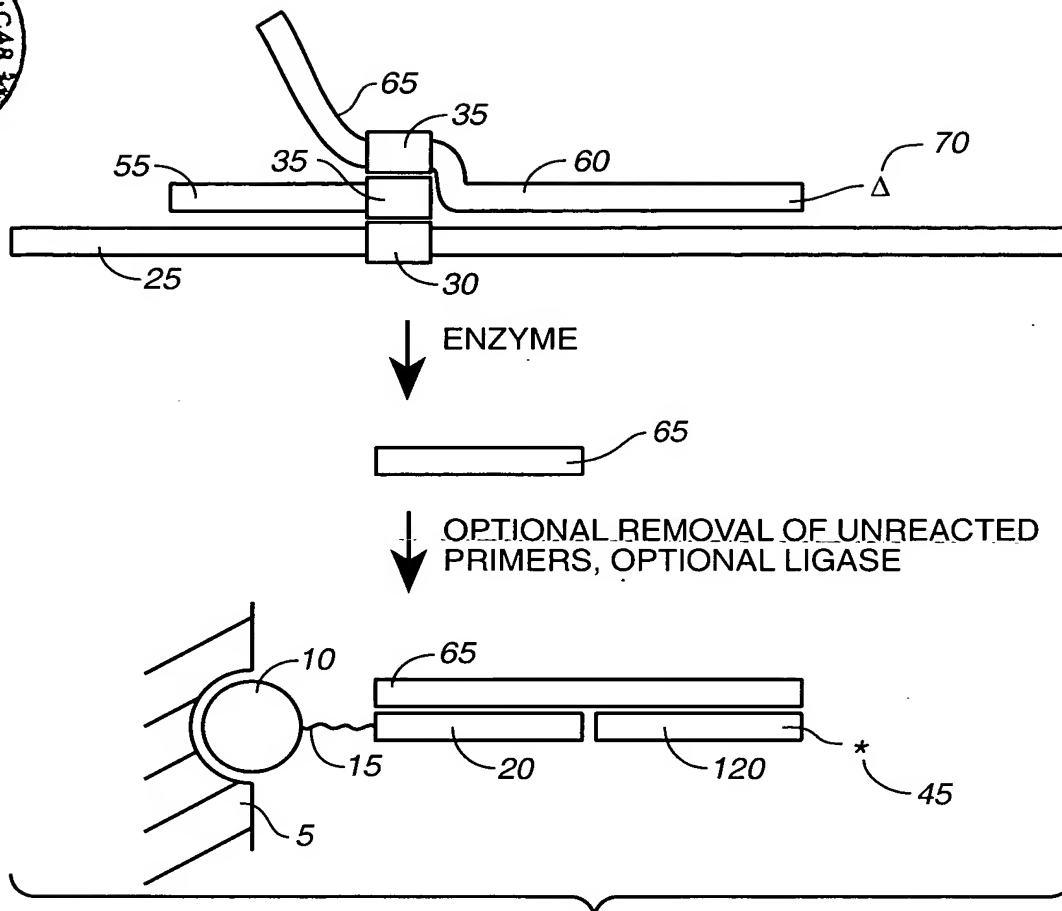
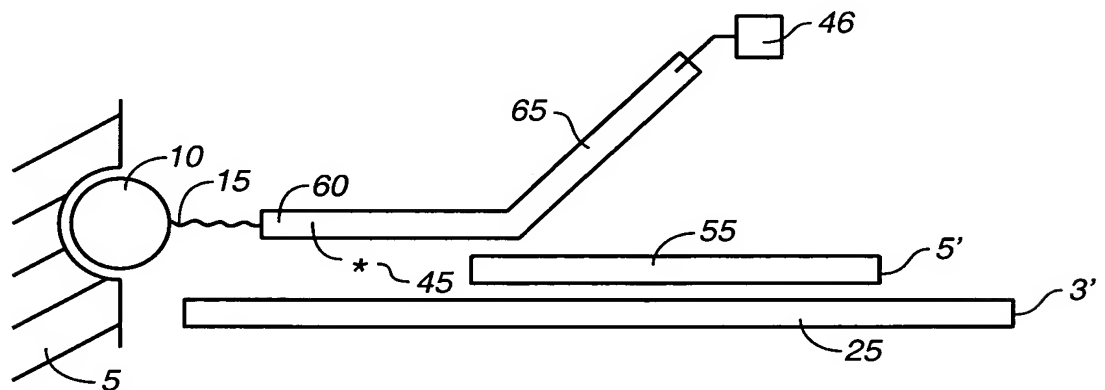


FIG._11A

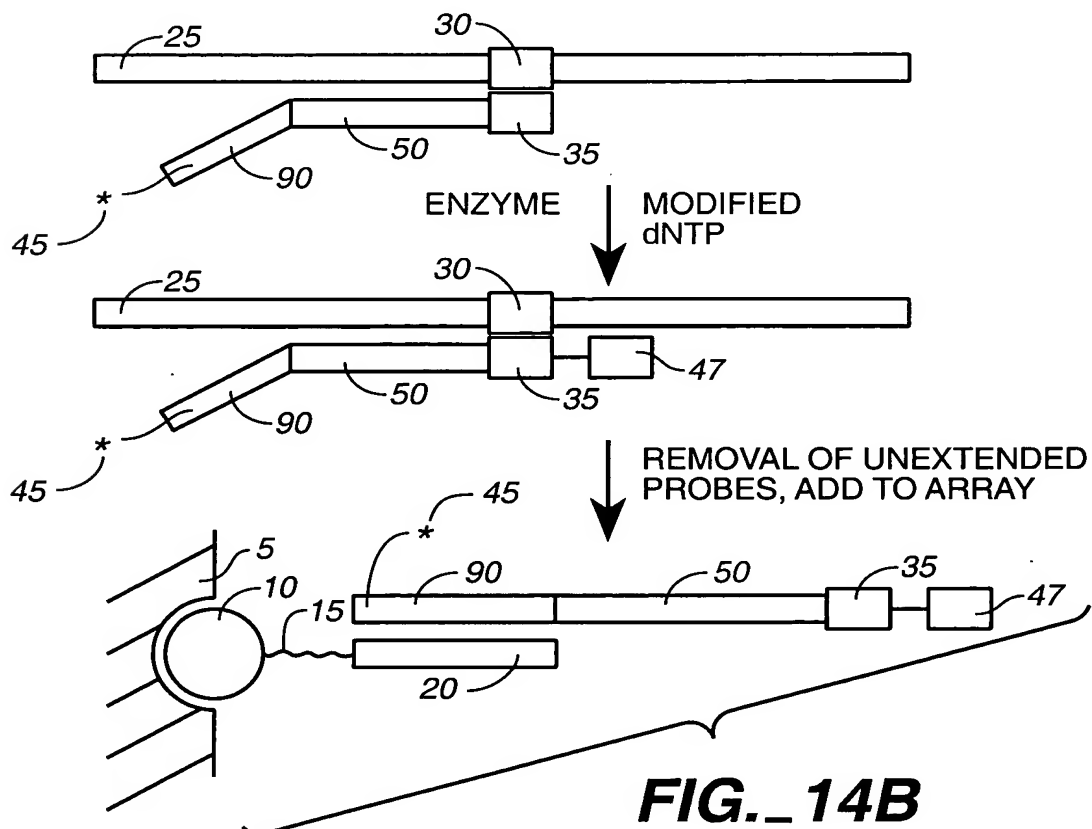
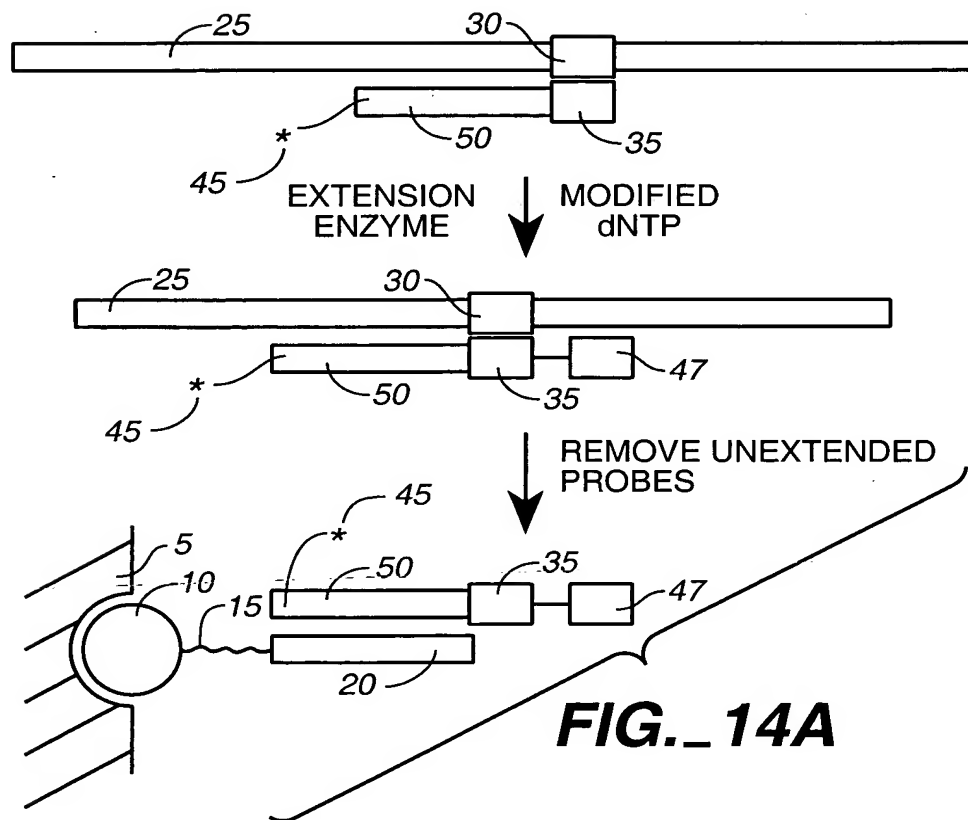
**FIG. 12A****FIG. 12B**

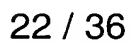
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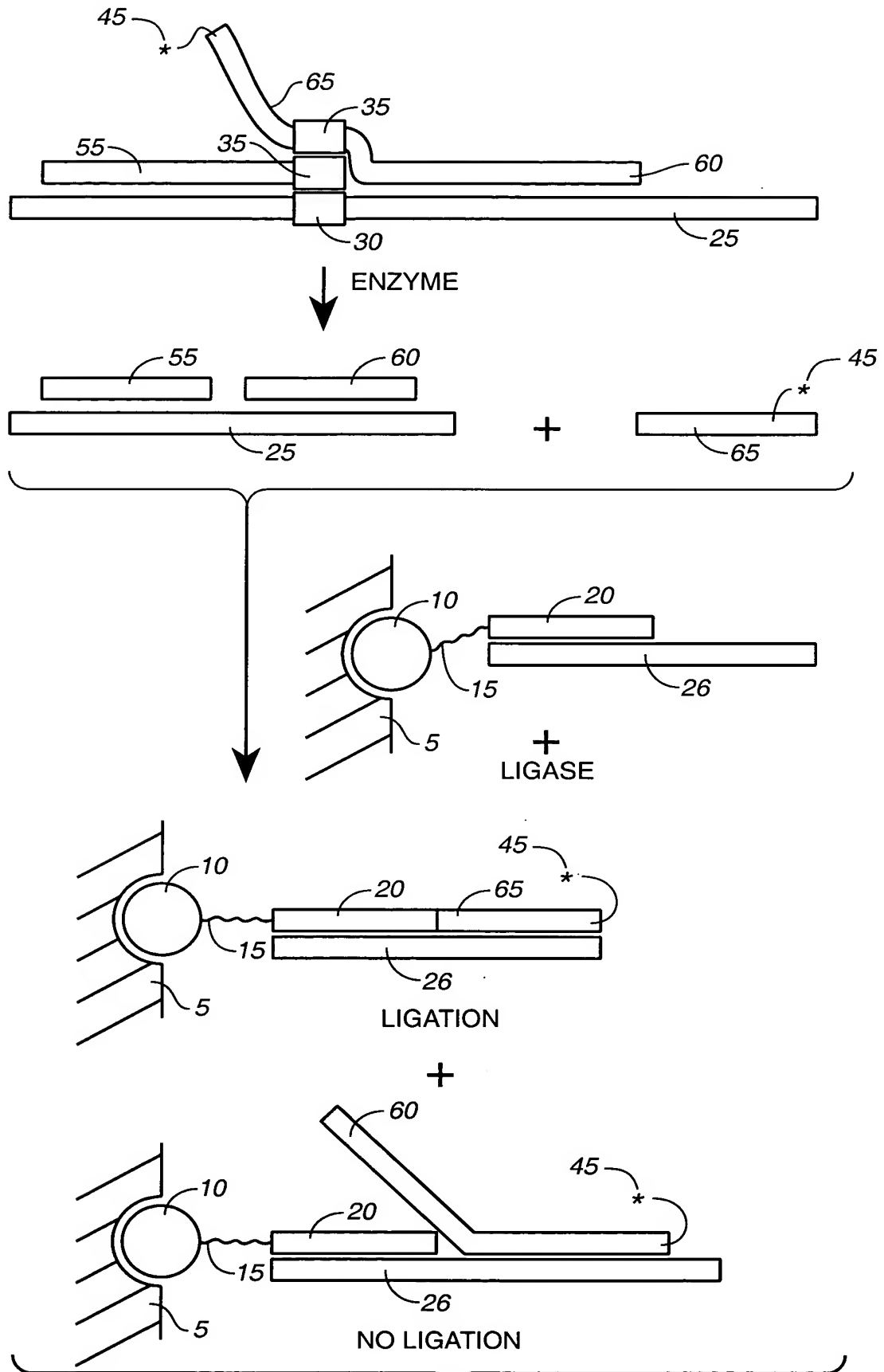
**FIG. 13D****FIG. 13E**

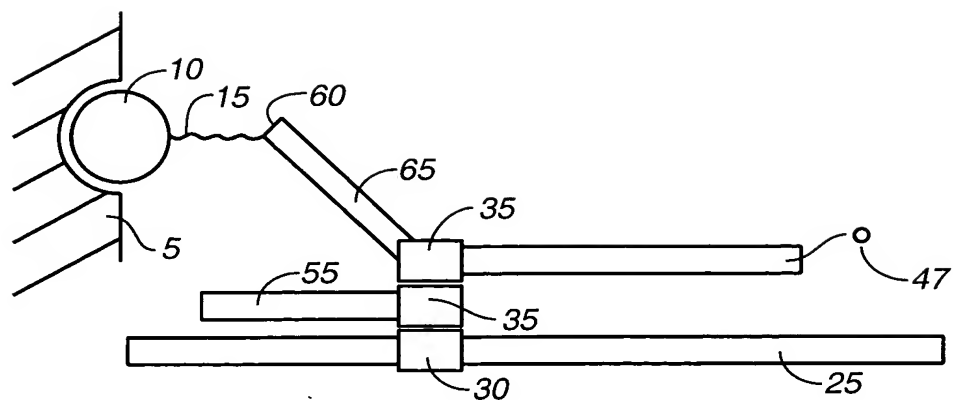
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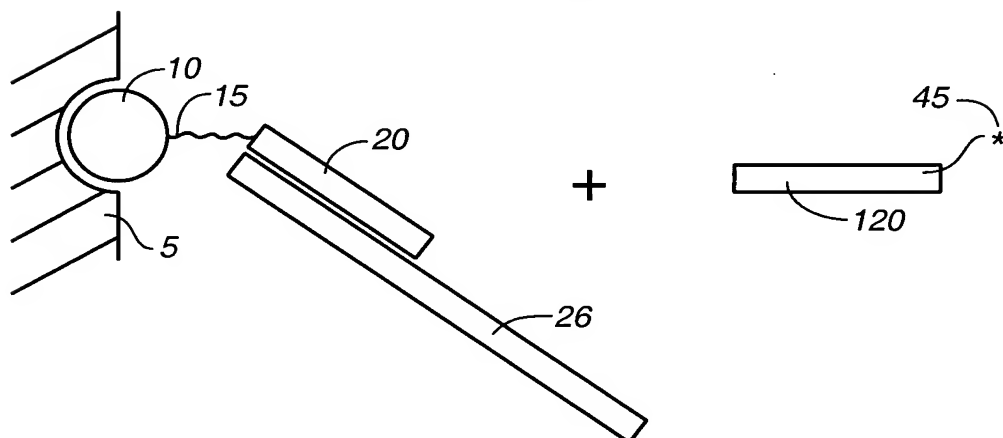


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**FIG. 15A**



↓
CLEAVAGE ENZYME
TARGET TEMPLATE



↓
LIGATION

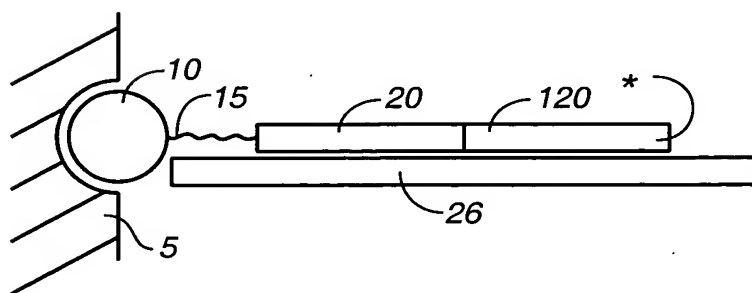
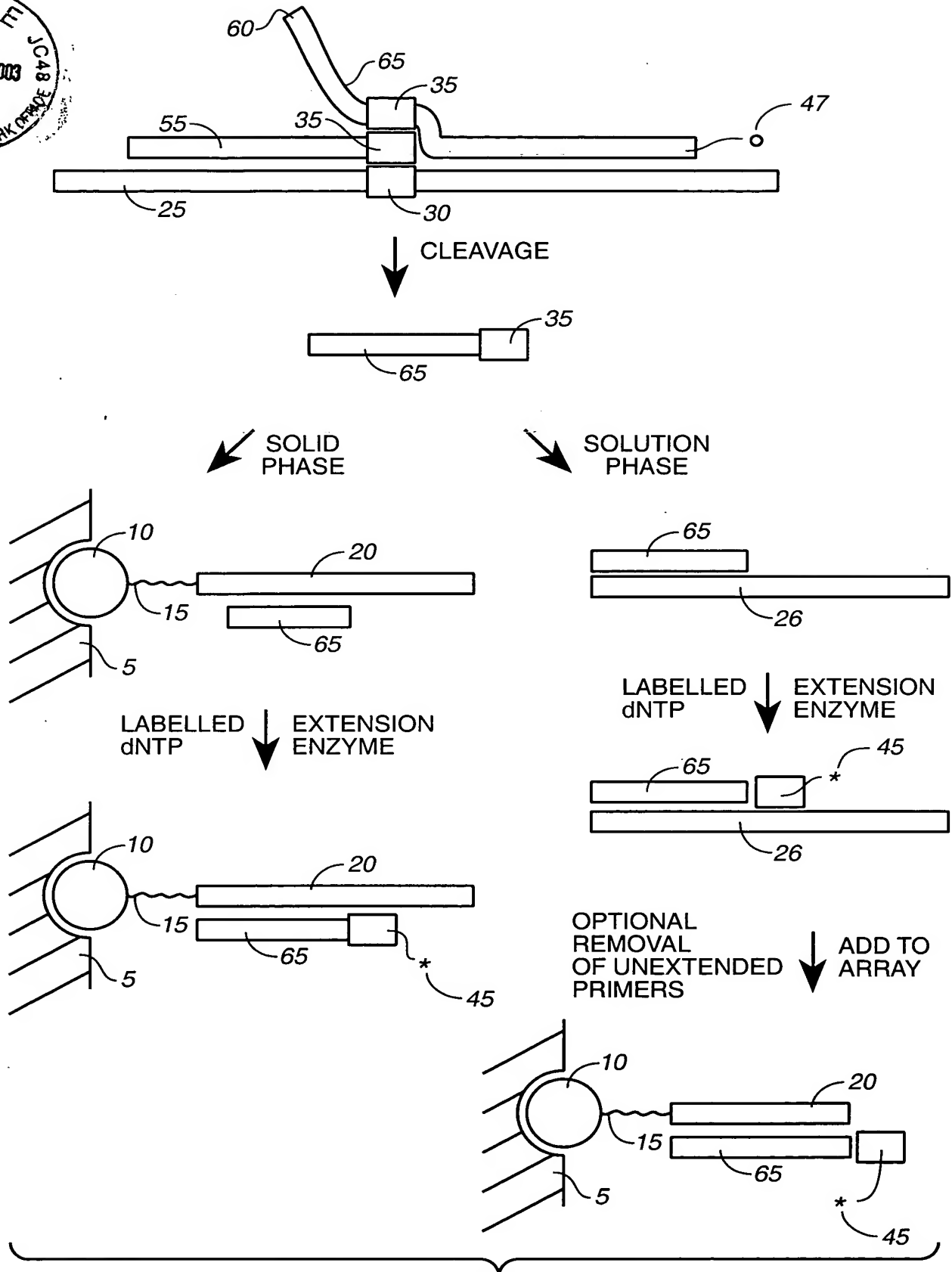
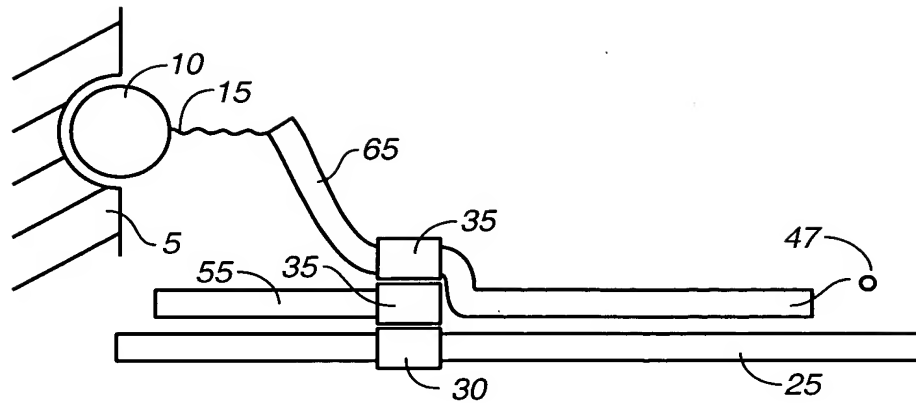
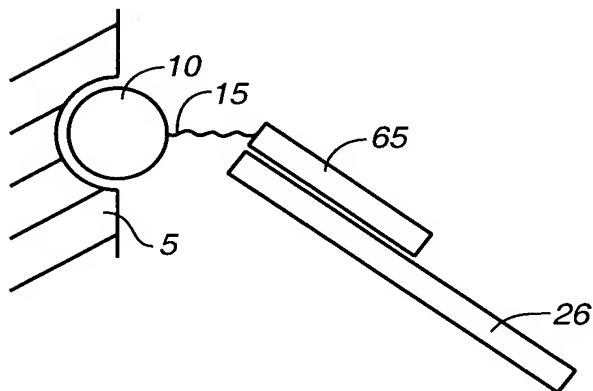


FIG. 15B

**FIG. 16A**



CLEAVAGE
ADD TARGET TEMPLATE



LABELLED
dNTP EXTENSION
ENZYME

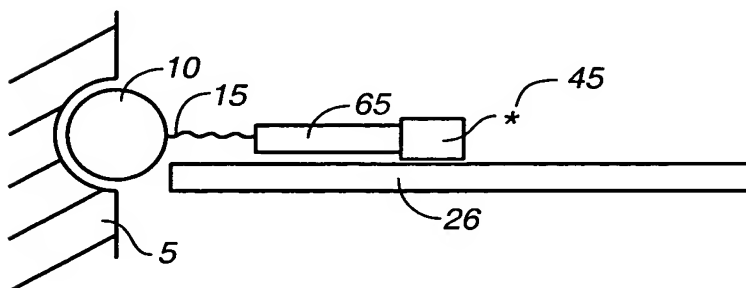
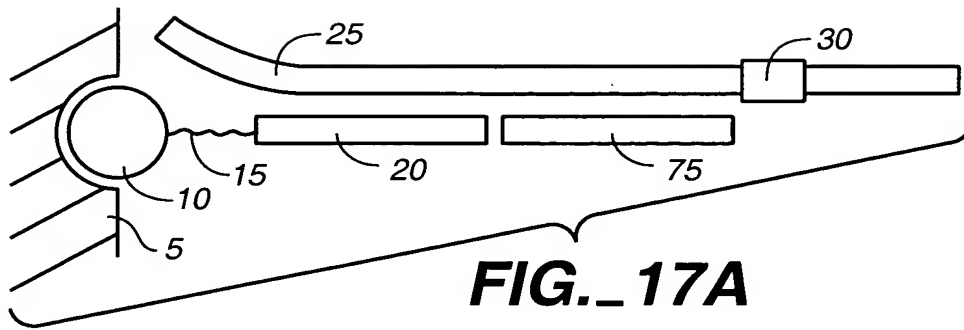
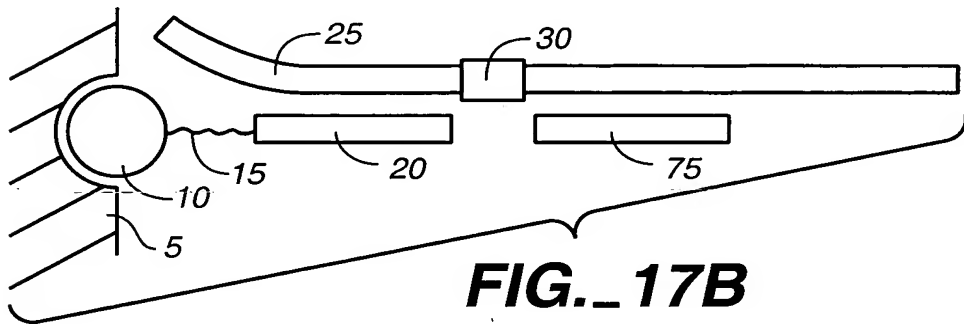
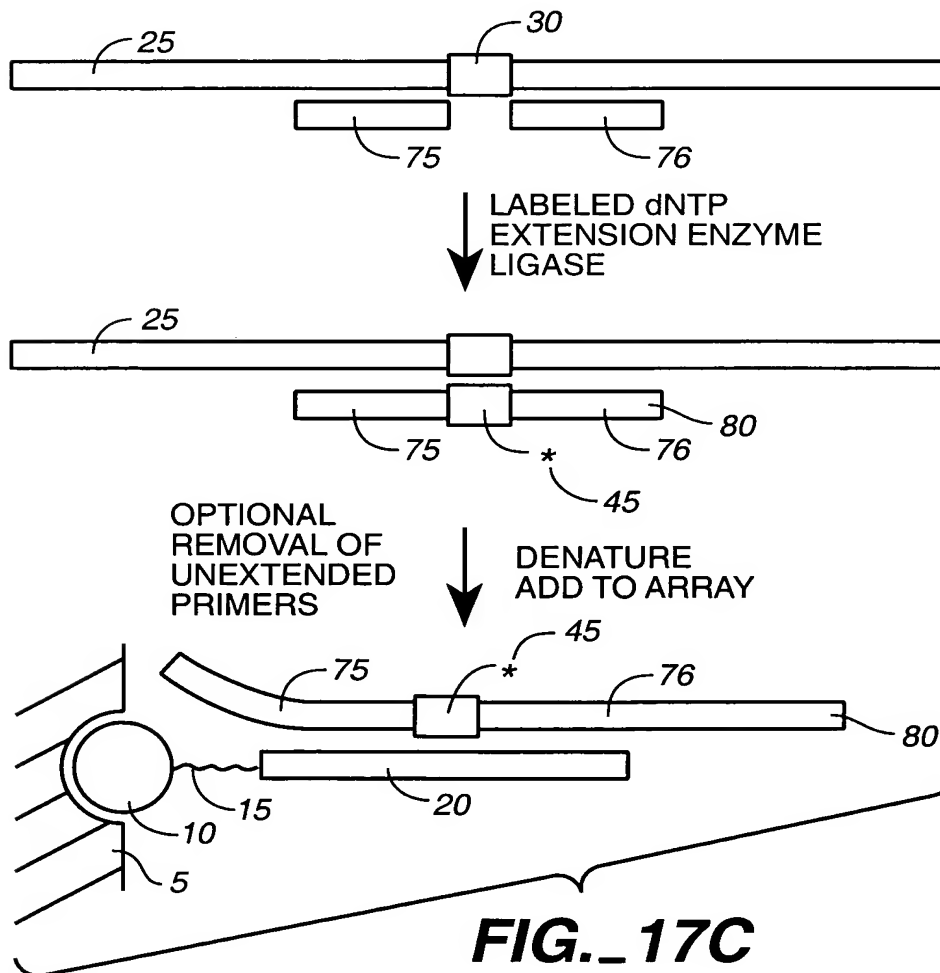


FIG. 16B

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**FIG. 17A****FIG. 17B**



3' CCC ————— TTTTTTTT-P5'
 cDNA

(1) CIRCULARIZE cDNA
WITH GUIDE LINKER

GGGAAA
CCCTTTTTTTT
P

(2) LIGATE

GGGAAA
CCCTTTTTTTT

(3) EXTEND AS
ROLLING CIRCLE

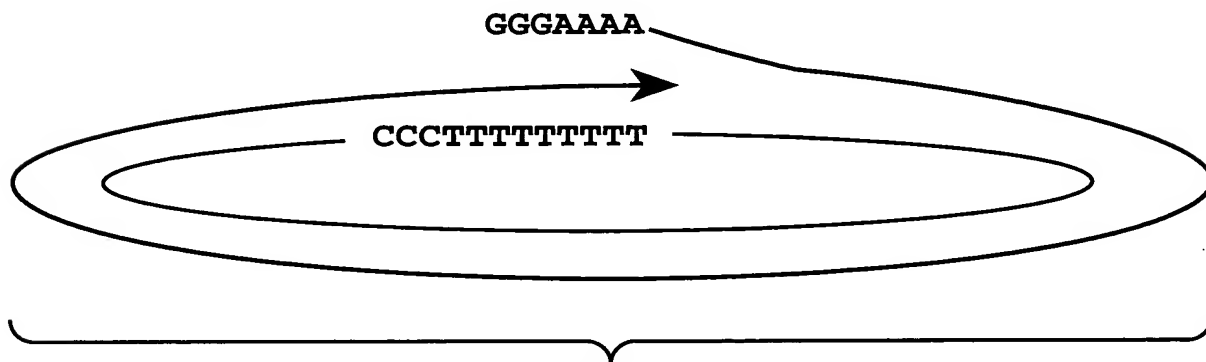


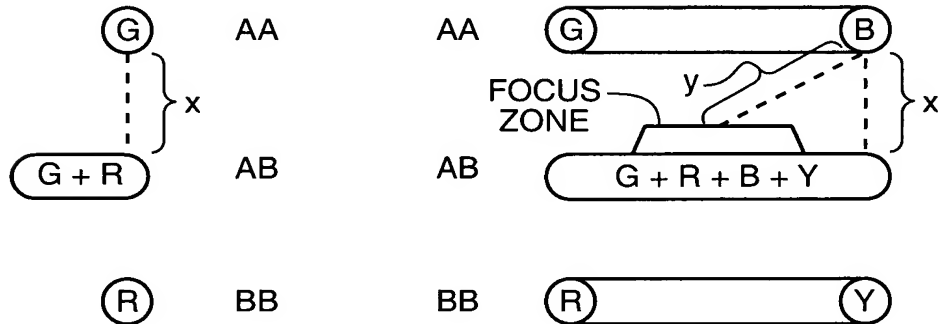
FIG. 18

SINGLE LABELED PROBE

GENOTYPE	SIGNAL
AA	G / G
AB	G / R
BB	R / R

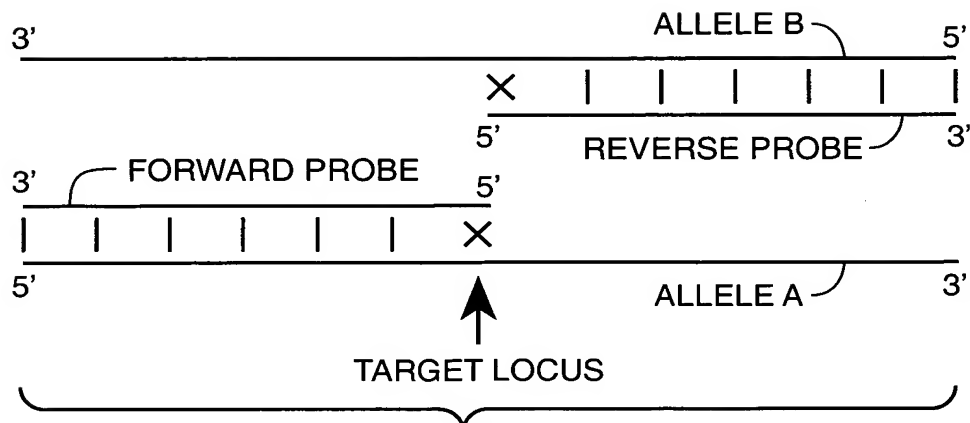
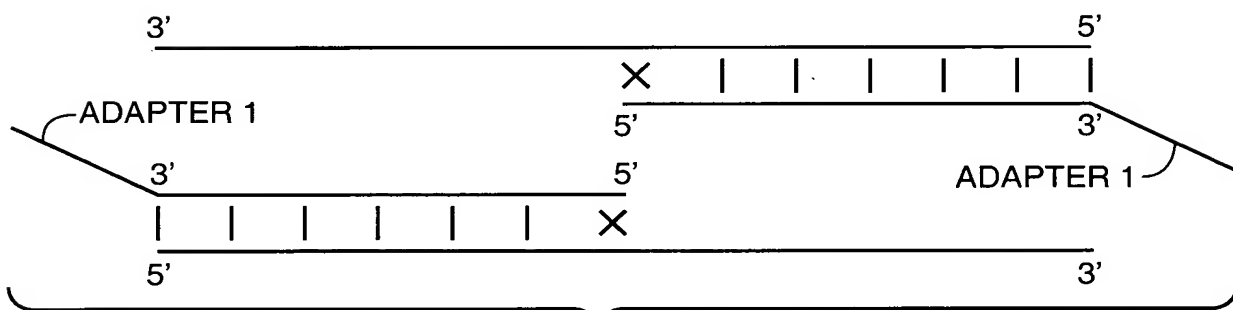
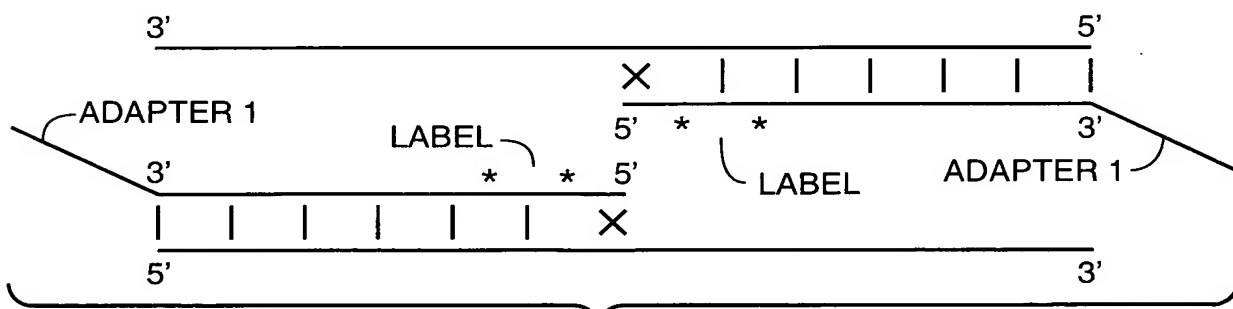
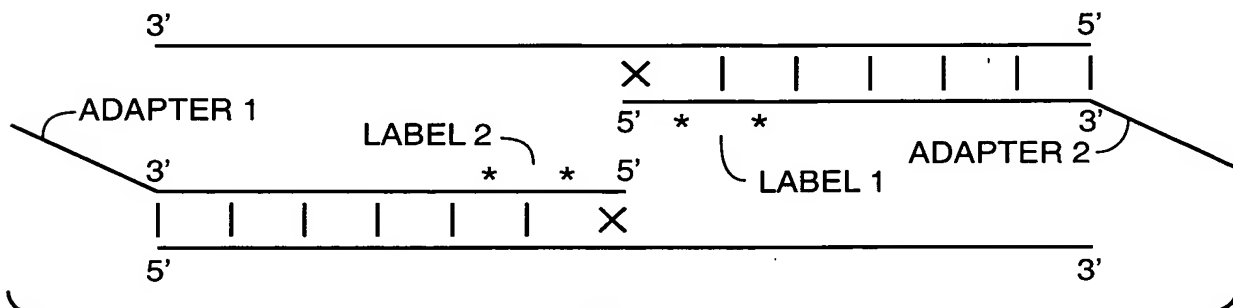
MULTI-LABELED PROBE

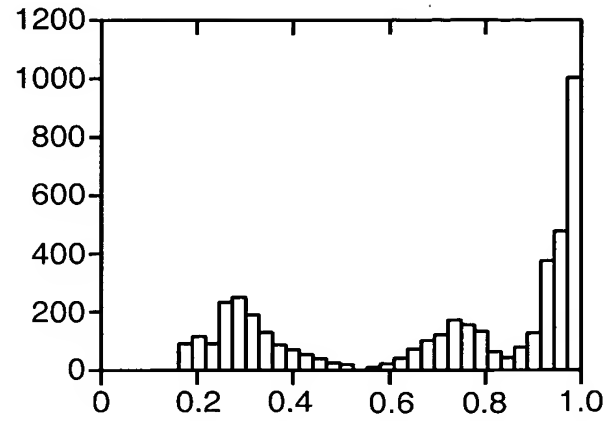
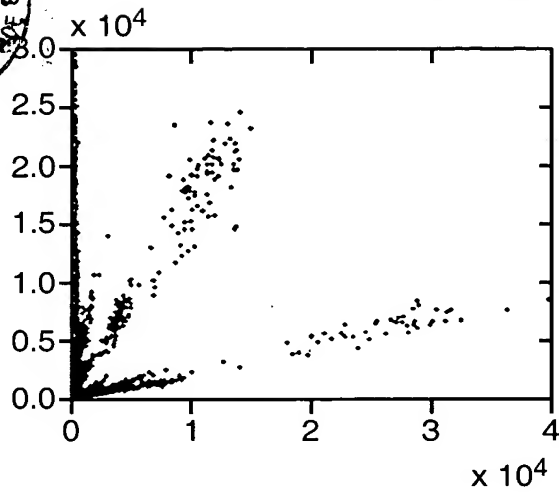
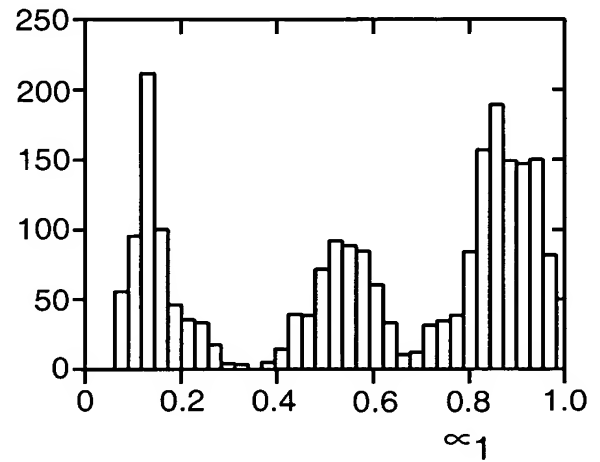
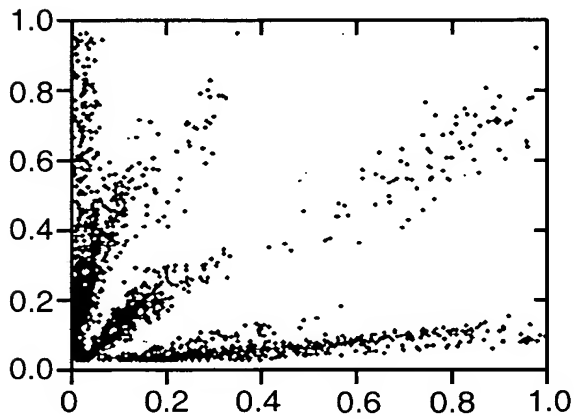
GENOTYPE	SIGNAL
AA	G,B / G,B
AB	G,B / R,Y
BB	R,Y / R,Y

SIGNAL RANGE

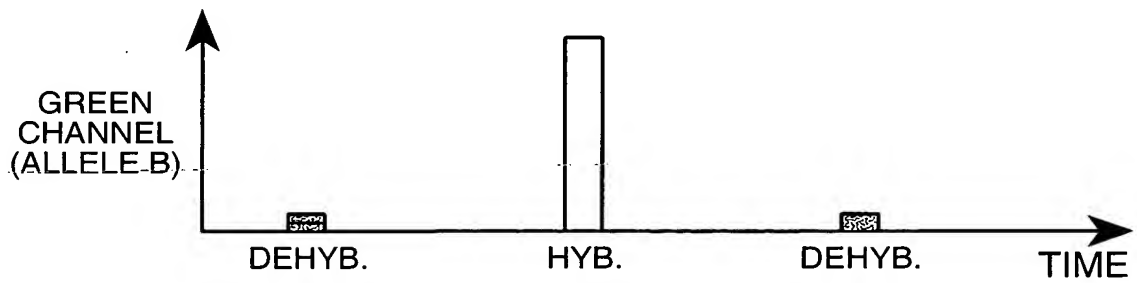
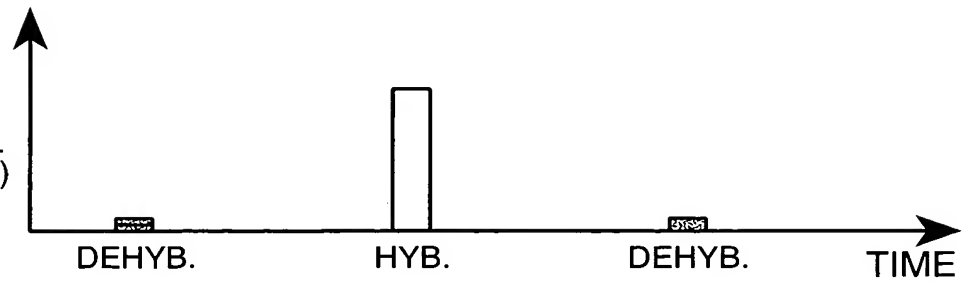
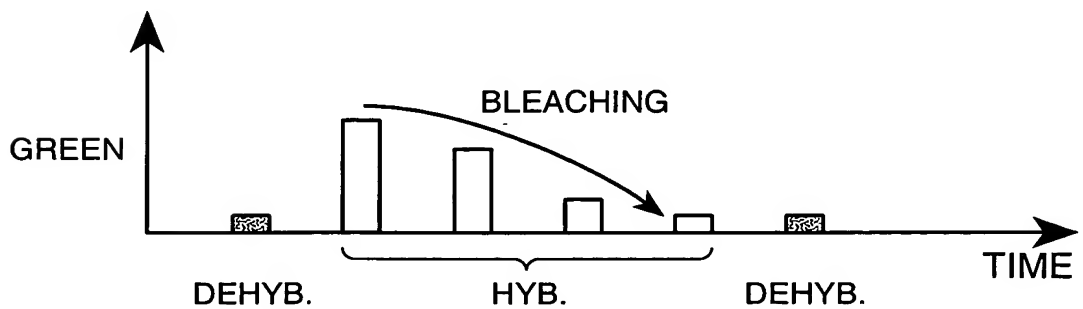
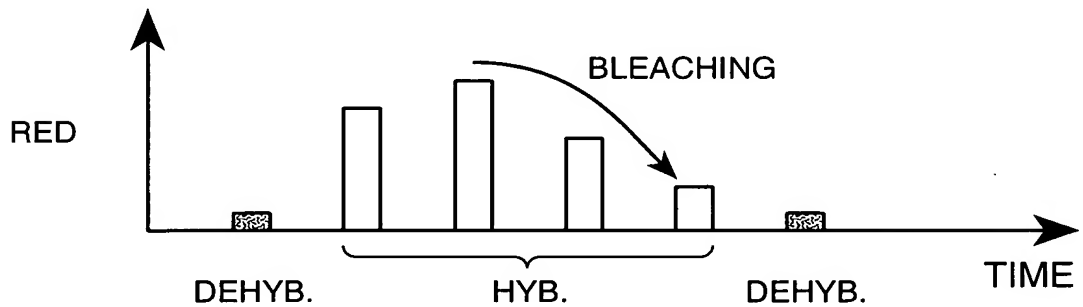
x = SINGLE LABEL DISTANCE
y = MULTI-LABEL DISTANCE

FIG. 19

**FIG._20A****FIG._20B****FIG._20C****FIG._20D**

**BEFORE NORMALIZATION****AFTER NORMALIZATION****FIG. 21**

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RED
CHANNEL
(ALLELE A)**FIG. 22A****FIG. 22B**

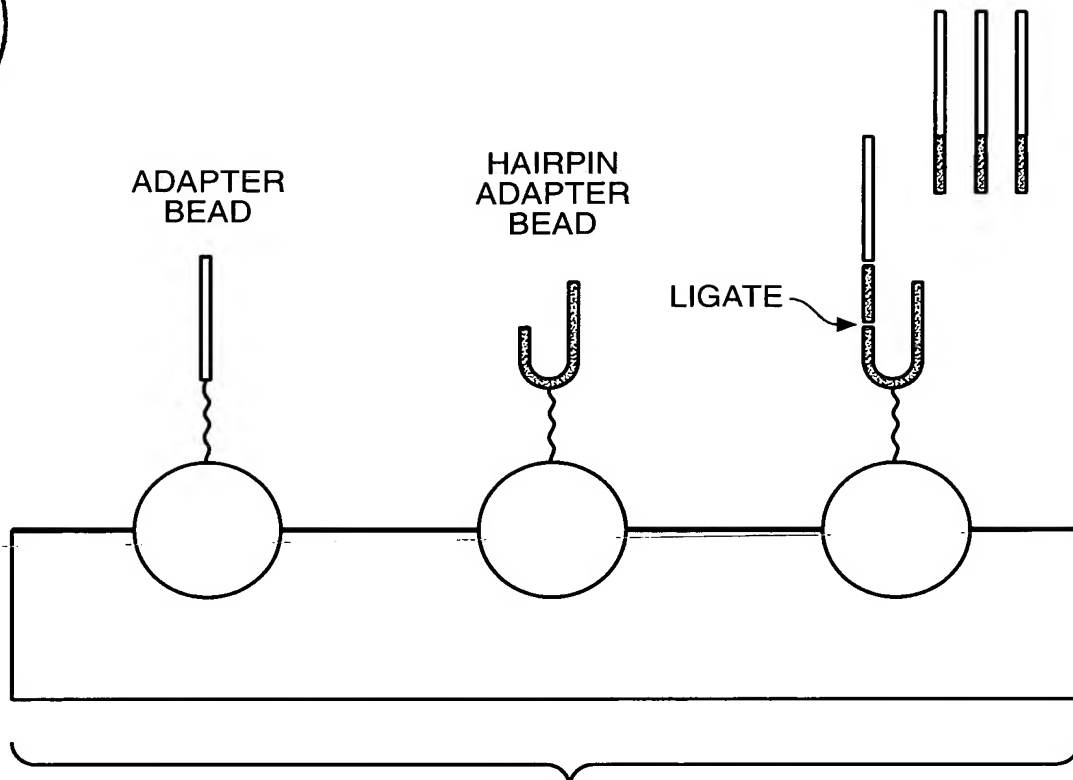
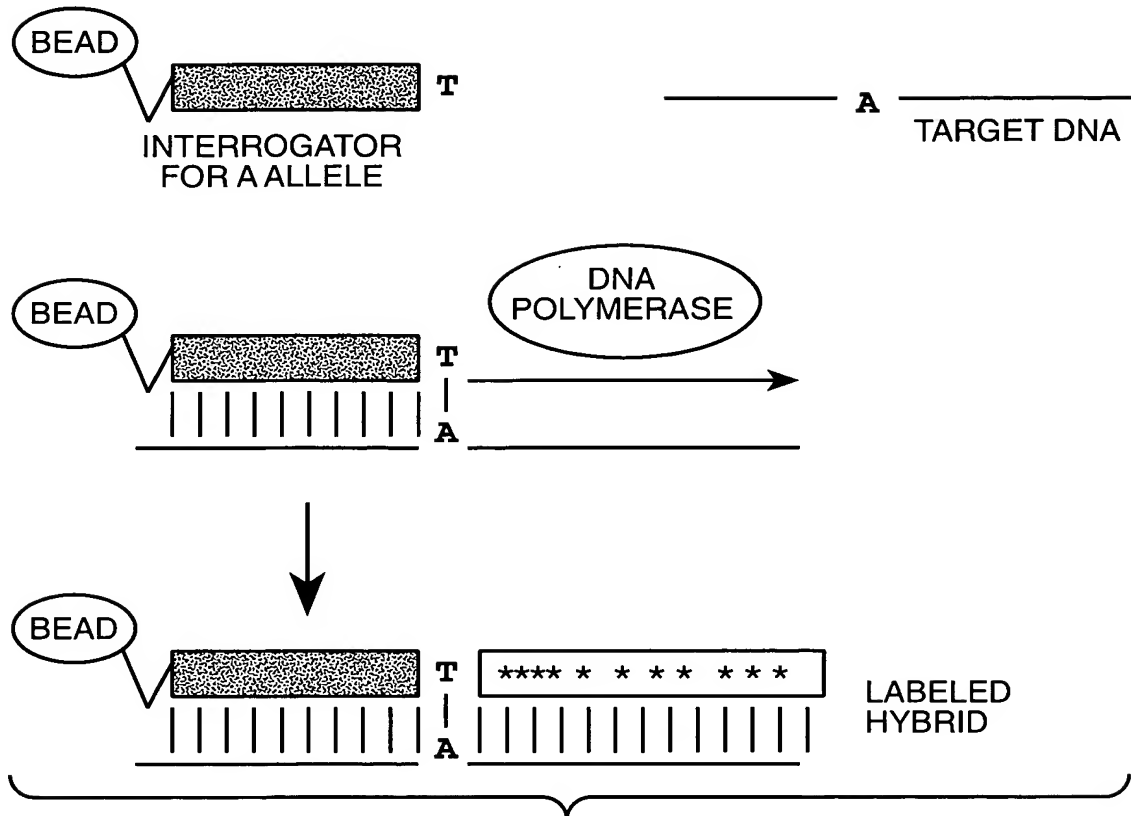
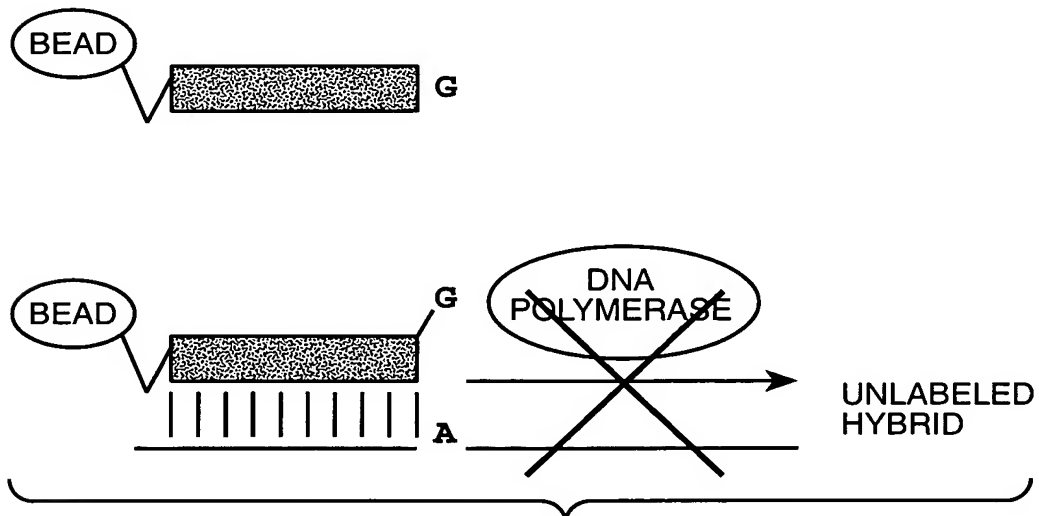
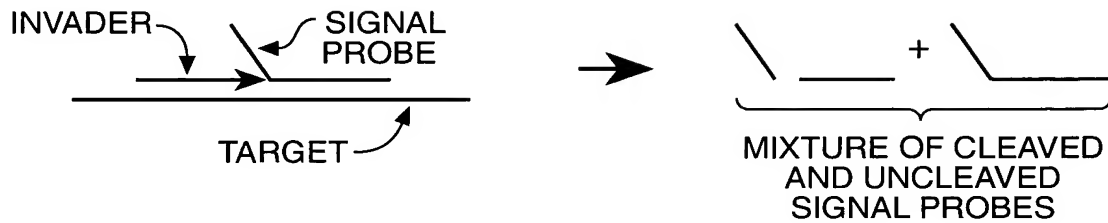
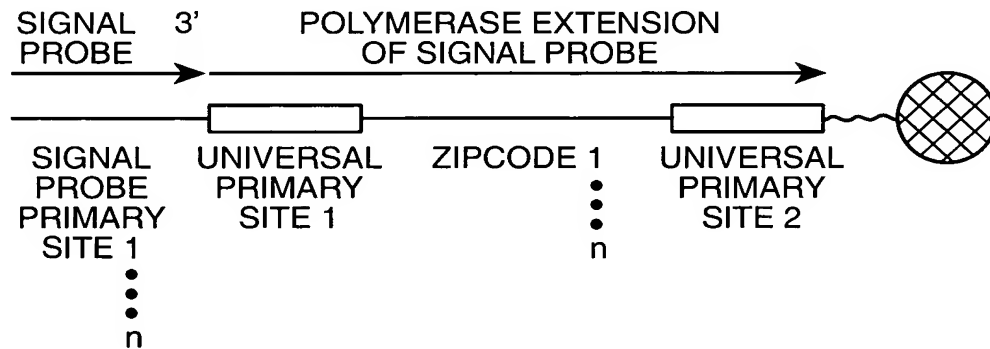


FIG._23

**MATCH TO SNP ALLELE****FIG._24A****MISMATCH TO SNP ALLELE****FIG._24B**

**INVADER - PCR****1) INVADER REACTION****2) REMOVAL OF UNCLEAVED SIGNAL PROBES****3) SIGNAL PROBE PRIMES SYNTHESIS OF AMPLICON TARGET STRAND****4) PCR AMPLIFICATION**

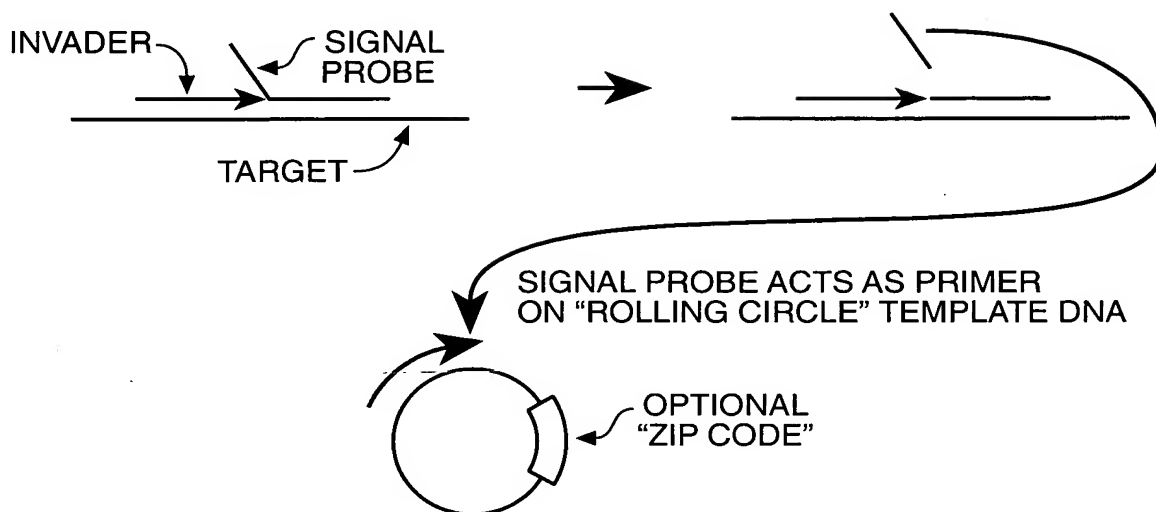
NEWLY SYNTHESIZED TARGET STRANDS ARE DENATURED FROM TEMPLATE AND TRANSFERRED TO PCR REACTION (UNIVERSAL PRIMERS, dNT's, TAQ POLYMERASE) FOR MULTIPLEX PCR. UNIVERSAL PRIMERS ARE LABELLED E.G. WITH BIOTIN.

5) ARRAY HYBRIDIZATION - PCR AMPLICONS CONTAINING ZIPCODES ARE HYBRIDIZED TO ARRAY.**FIG._25**

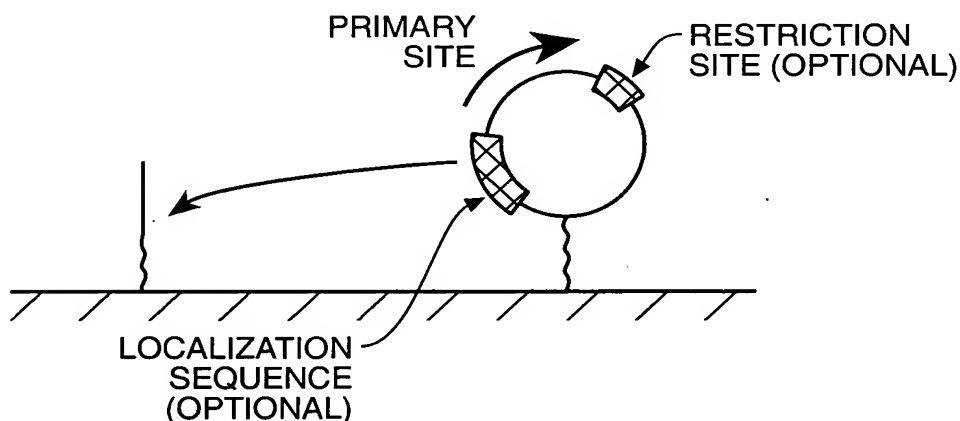


INVADER - ROLLING CIRCLE

1) INVADER REACTION



SOLID PHASE VERSION:



ROLLING CIRCLE TEMPLATE IS TETHERED TO SURFACE E.G. TO LOCALIZED "FEATURES" IN ARRAY FORMAT, OR TO BEADS.

ROLLING CIRCLE PRODUCTS CAN BE LOCALIZED E.G. BY HYBRIDIZATION TO ADJACENT PROBES OR RECOVERED IN LIQUID PHASE FOR HYBRIDIZATION TO A DETECTION ARRAY, E.G. BY ENZYMATIC CLEAVAGE.

FIG. 26